

## Table of Contents

1.0	<u>Expectations for Inspectors</u> .....	1-1
1.0.1	Learning Objectives .....	1-1
1.1	<u>Introduction</u> .....	1-1
1.2	<u>Inspector Mind Set</u> .....	1-2
1.2.1	Introduction .....	1-2
1.2.2	Objectivity .....	1-2
1.2.2.1	Independent Technical Judgment .....	1-2
1.2.2.2	Unbiased Attitude Toward Licensee .....	1-3
1.2.2.3	Conclusions Based on Facts .....	1-3
1.2.3	The Inspector is not a Consultant .....	1-3
1.2.4	Inspector Discretion .....	1-4
1.2.4.1	Control of Safeguards Information .....	1-4
1.2.4.2	Protection of Third Party Information .....	1-4
1.2.4.4	Allegation-Related Information .....	1-5
1.2.4.5	Criticism of Other Licensees or NRC Offices .....	1-5
1.2.5	Limits of Inspector Authority .....	1-5
1.2.5.1	Backfit .....	1-7
1.3	<u>Inspector Bearing</u> .....	1-8
1.3.1	Introduction .....	1-8
1.3.2	Appropriate Dress .....	1-8
1.3.3	Ready for Duty .....	1-9
1.3.4	Full Day's Work .....	1-9
1.3.5	Consideration for Licensee Operations .....	1-9
1.3.6	Avoiding Situations Where An Inspector's Objectivity Could Be Questioned .....	1-9
1.4	<u>Inspector Communications</u> .....	1-10
1.4.1	Introduction .....	1-10
1.4.2	Use of Moderate, Unbiased Language .....	1-10
1.4.3	Do Not Threaten a Licensee .....	1-11
1.4.4	Talk to the Right Person .....	1-11
1.4.4.1	The Licensee's Organization .....	1-11
1.4.4.2	The NRC Organization .....	1-12
1.4.5	Include the Right Information .....	1-12
1.4.5.1	Entrance Meetings .....	1-12
1.4.5.2	Exit Meetings .....	1-13
1.5	<u>Institutional Knowledge</u> .....	1-13
1.5.1	Introduction .....	1-13
1.5.2	Policies .....	1-14
1.5.3	Procedures .....	1-15

1.5.4	Programs .....	1-15
1.6	<u>Caution and Contingency Planning</u> .....	1-16
1.6.1	Introduction .....	1-16
1.6.2	Travel-Related Problems .....	1-16
1.6.3	Allegations .....	1-17
1.6.3.1	Receiving an Allegation .....	1-17
1.6.3.2	Processing Allegations in the Field .....	1-18
1.6.4	Emergencies .....	1-19
1.6.4.1	NRC Emergency Response .....	1-19
1.6.4.2	Inspector Response to Emergencies .....	1-20

**1.0 Expectations for Inspectors****1.0.1 Learning Objectives**

After studying this section you should be able to:

1. State the definition of “objectivity” as it applies to inspection.
2. Describe the limits of inspector authority at a regulated facility (i.e. describe what a licensee is required to provide an inspector and the limits of what an inspector can do).
3. Explain NRC expectations for inspector dress, fitness for duty, and working hours.
4. Describe the attributes of inspector communications with licensee personnel.
5. Describe who in the licensee and NRC organizations should be informed regarding significant safety issues and who should be in attendance at entrance and exit meetings..
6. Describe the type of information that should be conveyed at entrance and exit meetings.
7. Describe the differences between policy, programs and procedures.
8. Explain the elements of dealing with allegers.
9. Explain the duties and responsibilities of the inspector during declared on-site emergencies.

**1.1 Introduction**

To function effectively, any organization must articulate expectations for its personnel. It is particularly important for the prospective inspector to understand the many expectations of both the agency and its stakeholders for inspector performance. The inspector’s role and arenas vary significantly from those of most “typical” jobs. The inspector works with a great degree of supervisory and geographical independence.

The inspector’s actions, words, and judgements are observed and reacted to by a number of interested parties. Thus, it is important that inspectors develop a finely-tuned sense both of what is required and what is expected for a wide variety of situations.

A frequent rhetorical question in organizational studies is “who is the customer?” For the inspector, the customer is almost everyone with an interest in facility safety. The inspector serves the agency; but, by extension, the public, who looks to the agency for assurance of safety. Management at licensed facilities look to inspectors for honest assessments of the performance of their organizations. NRC technical and managerial staff look to the inspector’s results for indications of both individual licensee and generic industry

safety issues. Indeed, the press and local political leaders look to inspector findings and statements for newsworthy or public safety content.

The information presented in this chapter is intended to highlight areas of behavior and work practice that should become second-nature to the inspector in the conduct of inspection-related activities.

## **1.2 Inspector Mind Set**

“Some people try to find things in this  
game that don't exist but football is  
only two things - blocking and tackling”  
- Vince Lombardi

### **1.2.1 Introduction**

The inspector's mind set often defines and dictates how an inspection is performed, how well an inspection is performed, how the licensee perceives the inspector and the NRC, and, ultimately, the degree to which safety findings are received and addressed. To develop an appropriate mind set, the inspector must become familiar with the expectations for performance developed by the agency, the legal limits of the inspector's authority, and the forms of support available to the inspector in the performance of inspection-related activities. The following information, while not exhaustive, presents the basics in these areas, the “blocking and tackling” of the agency's expectations for inspectors.

### **1.2.2 Objectivity**

“Objectivity exists when the inspector implements the inspection program, interfaces with the public and conducts personal and organizational relationships in an unbiased manner, free from both partiality and antagonism toward a licensee or vendor, or the employees of a licensee or vendor, as evidenced by patterns of the inspector's actions” (NRC Inspection Manual 0215-03). Inspection Manual Chapter 02151 was issued originally in response to the need to be more definitive on the subject of inspector objectivity when the Resident Inspector Program was established (currently, this guidance is located in Inspection Manual Chapter 0102). However, all inspectors, regardless of their duty station, must be completely objective in their dealings with licensees, NRC management, and the general public. The following discussion provides details about how the concept of objectivity should be carried out in practice.

#### **1.2.2.1 Independent Technical Judgment**

The goal of the reactor oversight program is to identify potential or existing safety problems in NRC-licensed plants and operations, and to ensure that each identified safety-significant problem is corrected. Assuming a properly qualified inspector, the inspector's independent judgment is needed to identify safety problems and to determine whether licensee plans and actions are adequate to correct such problems. That judgment

should be independent in the sense that the inspector identifies a safety issue, considers a set of facts relating to that issue, consults with NRC specialists as necessary, and develops his/her own conclusion regarding the safety significance of those facts.

The inspector listens carefully to the licensee's response to an issue. The licensee may present additional facts that the inspector needs to consider before arriving at a conclusion on the matter. But in the end, after considering all pertinent information, the inspector should arrive at a conclusion as to safety significance of the issue based on his/her own independent evaluation of the facts and using established agency tools (e.g., the significance determination process). That conclusion may or may not be the finding recorded in the inspection report after management review. But regardless of the outcome of that review, the independent judgment of the inspector is a necessary and important factor in forming the agency decision on an issue arising from an inspection.

#### **1.2.2.2 Unbiased Attitude Toward Licensee**

An "unbiased attitude" means that the inspector approaches an inspection with a neutral attitude toward the licensee. He/she does not have a pre-conceived opinion that is either favorable or unfavorable toward the licensee (the entity) or toward individual licensee employees. In terms of fact gathering, the inspector develops all pertinent information on an issue or inspection item regardless of where it may lead. He/she does not pick and choose information to support a favorable or unfavorable opinion about the licensee.

#### **1.2.2.3 Conclusions Based on Facts**

An inspector draws conclusions about safety and compliance with NRC requirements solely on the basis of facts. The inspector does NOT state conclusions that result from theories or assumptions about what might have happened or speculation about how the licensee conducts certain activities or about what conditions exist or existed in the licensee's plant. The inspector's job is to determine the facts. The facts or hard information about a condition, situation, or event means that the inspector bases a conclusion on what he/she has observed directly (e.g; an operation, a plant feature, or the condition of equipment), read in a licensee document (e.g. operating or emergency procedure, or report of test results), or heard from a licensee manager/employee and substantiated by other inspection information.

#### **1.2.3 The Inspector is not a Consultant**

From the licensee's point of view sometimes it would be nice to get an inspector's recommendation as to how to fix a problem that either the licensee or the inspector has identified. If the subject is compliance with a particular license condition or rule, the inspector certainly can refer to a regulatory guide that describes an acceptable (but not necessarily the only) method of achieving compliance. However, in other areas for which the NRC has not established an acceptable position on a matter, there may be a number of ways to correct a problem. Each will cost the licensee some resources. It is the licensee's responsibility, not the inspector's, to decide how best to achieve compliance or correct any other problem relating to safe operation. With the

exception of providing the established NRC position on a matter, an inspector should not discuss the "best way" to solve a problem or suggest a way to comply with NRC requirements.

#### **1.2.4 Inspector Discretion**

Frequently, the inspector will need to apply discretion to information obtained in the course of inspections and discussions with licensee personnel. The information below introduces some typical areas encountered during inspections that require the inspector to apply discretion regarding the disclosure of information.

##### **1.2.4.1 Control of Safeguards Information**

Inspectors may, from time to time, come into contact with safeguards information in the course of inspecting licensed facilities. The licensees' security plans frequently contain safeguards information which describes the measures taken to prevent or respond to acts of radiological sabotage. While this information is not "classified," it is considered "sensitive unclassified" information and must be safeguarded and controlled. The inspector should become familiar with Management Directive 12.6, "NRC Sensitive Unclassified Information Security Program," and understand the requirements for ensuring that safeguards information is not inadvertently released through discussions, telephone conversations, or poor document control.

##### **1.2.4.2 Protection of Third Party Information**

Inspectors will occasionally review proprietary or third-party information. Such information can include utility or vendor reports or evaluations from industry organizations. One such industry organization is the Institute of Nuclear Power Operations (INPO). INPO evaluates member licensees periodically against a standard of excellence. This standard differs from the NRC standard of safety, and is typically more exacting and subjective. NRC inspectors, particularly resident inspectors will, from time to time, review INPO assessments for the licensee to which they are assigned. It is in the best interest of the NRC that INPO be able to conduct plant evaluations and assistance visits in an effort to improve nuclear safety. In addition to evaluations and assistance visits, INPO identifies and tracks significant technical issues through the Significant Operating Experience Reports and Significant Event Reports programs. INPO also manages and implements the accreditation of licensee training programs. The NRC should ensure that these INPO programs remain independent from the NRC inspection program to the maximum extent possible.

INPO findings, recommendations, and corrective actions should not be referenced in NRC agency documents. INPO findings, recommendations and licensee corrective actions should not normally be tracked by the NRC. Further, the staff should not focus on the INPO-assigned ratings or pressure licensees to supply that information. NRC personnel should not take possession of INPO evaluation documents, or make copies for NRC internal distribution absent extraordinary circumstances, or use these documents to form a basis for regulatory action. Additional guidance in this area is available in the Field Policy Manual (NUREG/BR-0075).

**1.2.4.3 Personal Information**

Inspectors can inadvertently collect personal information on licensee employees in the course of an inspection. For example, an inspection that involves reviewing the hours worked by control room operators may result in the inspector obtaining documents from the licensee's personnel organization that includes the social security numbers of the operators in question. Similarly, a review of employee medical records or fitness for duties may result in the accumulation of documents that contain personal medical information. Inspectors should be sensitive to this sort of possibility and safeguard the information to prevent inappropriate release of the information.

**1.2.4.4 Allegation-Related Information**

While the subject of allegations will be addressed more completely later in this chapter, the inspector should consider allegation-related information as requiring the utmost discretion. Information on particular allegations should be limited within the NRC to personnel with a need-to-know. Contacts with allegeders should include serious consideration on an acceptable location, out of sight or earshot of other licensee employees. In the course of planning allegations-related inspections, the inspector should, to the extent practicable, conceal the fact that an allegation gave rise to the inspection. Many allegeders come to NRC after attempts to correct an issue within the licensee's system have failed. For the inspector to focus attention solely on the issue of a particular allegation could inadvertently telegraph the allegeder's identity.

**1.2.4.5 Criticism of Other Licensees or NRC Offices**

Talking in a demeaning manner about one licensee to another licensee is a form of gossip that shall be avoided. When a licensee representative is a party to that type of conversation, the representative naturally assumes that the same thing will happen in regard to the licensee he/she represents. If an inspector exhibits such behavior, it will inhibit his/her ability to obtain information from the licensee being inspected. Sometimes, in the interest of sharing information so as to learn from industry experience, it can be appropriate to inform licensees of the facts associated with a problem at another facility. However, it is important to remember that the problem should not be presented as a criticism of the other licensee. With respect to talking negatively about other NRC offices, the inspector represents the NRC - the entire NRC establishment - and not just the region or headquarters office to which he/she is assigned. In that role, it is completely inappropriate to criticize in front of licensee representatives, the actions or positions that another office has taken on a matter. Disagreements between NRC staff members or offices should be resolved within the NRC and not disclosed to licensee personnel.

**1.2.5 Limits of Inspector Authority**

The Atomic Energy Act (AEA) of 1954 and the Energy Reorganization Act of 1974 authorize the NRC to license, regulate, and inspect nuclear material, facilities, and operators. This legislative action (and others) grants the NRC a great deal of authority. However, the AEA does not grant the agency authority over all

nuclear matters. Exceptions include activities conducted by the Department of Energy and defense power reactors.

At times, the authority granted the NRC is mistakenly perceived to reside in individual inspectors. In point of fact, the inspector's authority is limited to the area of fact-finding. The AEA authorizes civil inspection and investigation; criminal matters are pursued by the Department of Justice/Federal Bureau of Investigation. Enforcement matters involve agency decisions in which the inspector will play a part but for which the inspector cannot act unilaterally. Similarly, assessments of licensee performance are agency actions, not individual ones.

Licensees are required to provide inspectors with "...immediate unfettered access" (10 CFR 50.70(a)(3) to their facilities. However, even in providing inspectors this level of access, this portion of the Code of Federal Regulations provides limitations, stating that access will be provided "...following proper identification and compliance with applicable access control measures for security, radiological protection and personal safety." Thus, while a properly authorized inspector can demand access to areas of a facility, the licensee is not compelled to allow such access "immediately" if that means foregoing normal in-processing procedures.

10 CFR 50.50(a) states that "each licensee and each holder of a construction permit shall permit inspection, by duly authorized representatives of the Commission, of his records, premises, activities, and of licensed materials in possession or use, related to the license or construction permit as may be necessary to effectuate the purposes of the Act, including section 105 of the Act." Note that this does not allow inspectors to confiscate or to *demand* the reproduction of records (reproductions are typically provided to inspectors as a courtesy or a part of doing business rather than because of a requirement). Neither does this portion of the code empower inspectors to access information or enter areas that are not tied to a regulated activity.

Finally, inspectors may only expect licensees to adhere to requirements that are legally binding and to commitments made during the course of licensing or operations. The license for a given facility typically specifies the portions of the Code of Federal Regulations that apply to the licensee. Appendices to the license, such as technical specifications, also present requirements with which licensees must comply. The inspector must always be aware of what is binding upon the licensee and what is not. Licensees must not be made to feel compelled by NRC inspectors to take actions which amount to "good practices" or which advance the goal of "excellence." These areas are addressed within the licensees organization and within industry groups such as the Institute for Nuclear Power Operations.

As the examples above demonstrate, there are clear limits on the authority inspectors can exercise. Nonetheless, inspectors frequently find licensees deferring to their requests; at times, this behavior can be attributed to a desire on the part of licensees to support NRC inspection activities in an effort to ease the burden of inspections on both the inspectors and the inspected. At other times, however, inspectors may find licensee employees deferring to the inspector's requests due to the perception of inspector influence (either with employees' management or over performance ratings of a licensee). Because of this, inspectors must

be sensitive to what is being said and how it is received. As discussed later, the inspector should never directly or indirectly threaten a licensee.

### **1.2.5.1 Backfit**

The backfitting of a nuclear power plant is defined in NRC Manual Chapter 0514, "Management of Plant Specific Backfits," and 10 CFR 50.109, as:

"the modification of or addition to systems, structures, components, or design of a facility; or the design approval or manufacturing license for a facility; or the procedures or organization required to design, construct or operate a facility; any of which may result from a new or amended provision in the Commission rules or the imposition of a regulatory staff position interpreting the Commission rules that is either new or different from a previously applicable staff position...."

The Commission will allow backfitting of a facility only when it determines that there is a substantial increase in the overall protection of the public health and safety or the common defense and security to be derived from the backfit and that the direct and indirect costs of implementation for that facility are justified in view of this increased protection.

Backfits are expected to occur as part of the regulatory process to ensure adequate safety in the operation of NRC-licensed facilities. It is important, however, for sound and effective regulation, that backfitting be conducted in a controlled process. The Committee to Review Generic Requirements (CRGR) has the responsibility to review and recommend to the EDO approval or disapproval of requirements to be imposed by the NRC staff on one or more like categories of reactor licensees. The objectives of the CRGR process are to eliminate or remove any unnecessary burdens placed on reactor licensees, reduce the exposure of workers to radiation in implementing these requirements, and conserve NRC resources while at the same time ensuring the adequate protection of the public health and safety.

When a staff position is issued, it is considered a backfit if it is issued (1) after the issuance of the construction permit for the facility, (2) less than six months before the date of docketing of the operating license application for the facility, or (3) after the issuance of the operating license for the facility.

NRC inspection procedures govern the scope and depth of staff inspection associated with licensee activities such as design, construction, and operation. As such, they define those items the staff is to consider in its determination of whether the licensee is conducting its activities in a safe manner. An NRC inspection is intended to confirm licensee compliance with NRC requirements and licensee docketed commitments for safe operation. An inspection should not result in findings that represent new regulatory requirements being imposed on the licensee. If inspection results indicate a need for new regulatory requirements, such information should be directed toward the appropriate program office and not the licensee.

Inspector discussions with the licensee should only refer to regulatory requirements, such as technical specifications, and not the requirements of the inspection procedure. Inspector statements to the licensee that the requirements of an NRC inspection procedure are NRC requirements that must be met by the licensee, are inappropriate and may constitute a plant-specific backfit. Discussion or comment by the NRC inspector regarding deficiencies observed in the licensee's conduct of activities, whether in meetings or in written inspection reports, do not constitute backfits, unless the inspector suggests that specific corrective actions different from those required by previously applicable regulatory positions are the only way to correct the problem. In the normal course of inspecting to determine if the licensee's activities are being conducted safely, inspectors may examine and make findings in specific technical areas wherein prior positions and licensee commitments do not exist. Examining such areas and making findings are not considered backfits. Likewise, discussion of findings with the licensee is not considered a backfit. If during such discussions, the licensee agrees that it is appropriate to take such action in response to the inspector's findings, such action is not a backfit provided the inspector does not indicate that the specific actions are the only way to correct the problem. On the other hand, if the inspector indicates that a specific action must be taken, such action is a backfit unless it constitutes an applicable regulatory staff position.

### 1.3 Inspector Bearing

“Always do right. This will gratify some people and astonish the rest.”  
Mark Twain

#### 1.3.1 Introduction

In the course of performing inspections, the inspector encounters many individuals from the licensee's organization, from mechanics and electricians to reactor operators and corporate officers. The inspector, often working alone or in small groups, thus leaves an impression of the NRC and the federal government with a broad cross section of people. For this reason, it is important for inspectors to comport themselves appropriately and in a manner stresses professionalism and mutual respect both in the regulated community and within the agency. The following sections discuss NRC management expectations in this area.

#### 1.3.2 Appropriate Dress

The NRC does not have a written dress code. But there are accepted practices about appropriate dress that NRC staff members should follow when interacting with licensees and other members of the public. To help ensure that licensee representatives concentrate on what the inspector says rather than the clothing he or she wears, the inspector needs to dress appropriately for the planned day's work. For example, if the inspection will involve crawling through piping or other physical effort, the inspector should dress informally for that activity. On the other hand, for a meeting with corporate management, the inspector should dress in business attire and not show up for the meeting in blue jeans and a sport shirt or blouse. These are common-sense practices and should be followed as a matter of course by NRC inspectors.

### **1.3.3 Ready for Duty**

An inspector should have sufficient pride in his/her work to arrive at a reactor site or licensee's office fully fit to carry out the day's activities. NRC management reasonably expects that this will be the case. The inspector is expected not to be under the influence of alcohol, other legal or illegal drugs, or emotional distress that inhibits his/her ability to perform fully the inspection function. Note that alcohol consumption should be limited at least five hours prior to going on site. Although an inspectors cannot control how well they will sleep, an inspector certainly can, as a minimum, get to bed at a reasonable hour and be physically and mentally prepared for the next day's work.

### **1.3.4 Full Day's Work**

As a representative of the Federal Government, an inspector should ensure that the adage about a "full day's work for a full day's pay" is carried out literally. The "full day" begins when the inspector arrives at the licensee's site or offices and not when he/she leaves the motel or home (resident inspector). The "full day" ends when the inspector has put in the number of hours for which he/she will be paid (unless in official travel status).

### **1.3.5 Consideration for Licensee Operations**

By their very nature, inspections have a negative impact on licensee operations. NRC inspectors should strive to meet the objectives of the inspection without unnecessarily disrupting the work of licensee personnel. In the course of an inspection, licensee personnel may be needed for an interview, to produce certain records, or to show the inspector some particular feature of the plant. To the extent practicable, these activities ought to be planned and scheduled in advance with the involved licensee personnel. If the scheduled time cannot be met, the inspector should contact that person and arrange for a new time. This is just common courtesy and a display of professionalism in carrying out the inspection function.

In the control room, inspectors must be especially sensitive to the impact they may have on licensee operations. Discussing issues with control room personnel is frequently necessary; however, inspectors must be mindful of the fact that the time operators spend engaged by NRC personnel is time that they do not have their full attention directed on the operation of the facility. Inspectors should avoid drawn-out conversations with those standing control room watches and should avoid becoming an obstacle to operators' access to equipment. Similarly, inspectors finding themselves in the control room during an event or plant transient must ensure that they do not impede operators addressing plant conditions.

### **1.3.6 Avoiding Situations Where An Inspector's Objectivity Could Be Questioned**

As an independent observer of licensee facilities and activities, the inspector needs to avoid actions or situations that could indicate to any member of the public that the inspector has a relationship with the licensee that is anything but one of strict government business. For example, if after a public meeting, an

inspector stands around to chat in a friendly, informal manner with licensee representatives, the public could very well wonder whether a relationship exists that is more than business. Other examples include, but are not limited to, dining together, riding in licensee-owned vehicles, or socializing in other ways.

Government-wide Ethics Regulations contain the formal standard of conduct for NRC employees including provisions dealing with apparent or real conflicts of interest. However, for the purposes of this course, the emphasis is on the important concept that the inspector should be alert to potentially compromising situations (as viewed by members of the public) and should avoid them.

#### **1.4 Inspector Communications**

“Good communication is as stimulating as black coffee and just as hard to sleep after.”

Anne Morrow Lindbergh

##### **1.4.1 Introduction**

While inspectors are, primarily, engaged in the acquisition and analysis of technical information, the impact of the best technical findings will be severely diminished if the inspector is unable to communicate them. In fact, if the inspector is not effective in communicating his needs during an inspection, the results of the inspection may not be as fruitful as they might otherwise be. The importance of effective communications applies equally to discussions taking place between the inspector and the licensee and the inspector and other agency personnel. The following sections discuss aspects of communication that should be mastered by an inspector.

##### **1.4.2 Use of Moderate, Unbiased Language**

When discussing inspection findings with licensee representatives, the inspector should avoid using such judgmental and extreme adjectives as "the worst" to characterize licensee performance. Instead, the inspector should state the facts that he/she has developed and the safety significance of those facts in terms of how they could prevent safety systems from functioning properly, could result in excessive personnel exposure to radiation, could create any other unsafe condition to an individual or plant protection. In addition, the inspector should state if the facts appear to represent a violation of an NRC requirement (e.g., a regulation, license condition, order).

This precept of moderate, unbiased speech should also extend to discussions occurring within the NRC. A dispassionate description of findings and events significantly aids NRC regional and headquarters personnel who may be needed to help the inspector characterize information and events. By “crying wolf” over the significance of a particular issue, the inspector (however unwittingly) may well influence the allocation of limited NRC resources (through the number of additional inspectors that may be dispatched to an event or called to evaluate an issue).

**1.4.3 Do Not Threaten a Licensee**

The inspectors must never threaten a licensee directly or implicitly. Licensees know that unfavorable publicity or resistance to NRC concerns may end up hurting their reputation or costing more money than accommodating an inspector's suggestion to resolve a problem. Therefore, an inspector should choose his/her words carefully when talking to licensee management about "excellence," "upgrades," and "nice-to-do improvements."

An inspector has no authority to issue any kind of an enforcement document (except in certain cases involving materials licensees) and cannot state with certainty what action NRC will take regarding an apparent violation. Therefore, if an inspector were to state how the NRC would act in a particular situation, he/she would have no assurance that NRC would take that action. With the exception of minor enforcement involved in the Materials Inspection Program, enforcement action requires approval by NRC management.

More important, however, is the fact that NRC management expects inspectors to hold technical safety discussions with licensees concerning preliminary inspection findings and to conduct those discussions in a businesslike and objective manner. These discussions must not include any threat by an inspector as to what the NRC might do if the licensee does not agree with the inspector.

**1.4.4 Talk to the Right Person****1.4.4.1 The Licensee's Organization**

During inspections, the NRC representative may talk with a wide variety of licensee employees including technicians, professional staff members, supervisors and managers, and possibly corporate executives. These individuals have jobs to perform and time spent with the NRC representative reduces the time that is available for the principal duties of the position. Therefore, the inspector should know beforehand what information he/she seeks, get to the point and not waste the licensee employee's time.

At the beginning of an inspection, an entrance meeting is typically conducted. It provides an opportunity for the inspector to confirm who in the licensee's organization is to be contacted and what areas specifically are targeted for inspection. It can also be used to set schedules for interviews and arrange for observation of work in progress.

The licensee's staff should be made aware of the inspector's issues as they are developed. Continual appraising permits the inspector to test the issues as they are developed and the licensee to either rebut the issues or begin to correct the underlying problems. This communication of issues should be conducted with the knowledgeable manager or supervisor directly involved in the area. There should be no surprises to these individuals. The appraising of issues should be made in a regularly scheduled debriefing or, if no debriefing is regularly scheduled, soon after the inspector has come to a preliminary conclusion. The issues should be escalated to higher licensee management if warranted by the safety significance of the issues.

A more formal example of continuing communication during an inspection is the regular meeting between licensee staff and a team leader during a team inspection. This meeting is typically held at the end of each day or at the beginning of each day so that the team leader can summarize the current issues and the licensee staff can provide information or actions on these issues. The communications continue in this manner throughout the inspection and culminate in a detailed final debriefing which forms the basis for the formal exit meeting.

The exit meeting should be held with senior licensee management. In general the level of management should be that appropriate to deal with the findings and make commitments for corrective actions. For findings of significant risk issues, the highest level of power plant management available should be involved. If the site inspection work is completed and the inspector cannot obtain an appropriate or timely management meeting for exit purposes, a responsible licensee staff member should be informed of the inspection findings and the fact that an exit with appropriate management will be arranged as soon as possible.

It is probable that, from time to time, a member of a licensee organization will challenge an inspector's preliminary conclusion on an issue. Any conclusion or statement concerning inspection results should be supportable by sound reasons and facts. The inspector should listen carefully to what the licensee is saying, stay calm, and respond to the challenge by providing the licensee with additional examples to illustrate the problem, citing NRC documents that give the agency position on the issue, or saying that he/she will include in the inspection report the additional information the licensee has provided.

#### **1.4.4.2 The NRC Organization**

The resident inspection staff at power plants should be kept apprised of ongoing issues as the resident staff may have knowledge of the issues that could be beneficial to the inspector. Discussions with regional supervision is appropriate for significant or unusual issues before discussions with the licensee. The inspector also should communicate issues to other inspectors who are involved with the inspection. Exit meeting information should be conveyed to regional supervision before the exit where this is regional protocol.

### **1.4.5 Include the Right Information**

#### **1.4.5.1 Entrance Meetings**

An entrance meeting is a simple, but important, beginning to an inspection. Typically, it is the first thing an inspector arranges on site. An entrance meeting is conducted to tell licensee management what is to be inspected and what records, personnel, and activities need to be made available for inspection.

The entrance should be planned in advance to be brief. An understanding by both inspector and those to be inspected of the scope and approach for the inspection should result from this meeting. A question which should be asked at the entrance meeting is: "Is there anything I should be aware of within the scope of this

inspection about your activities under your NRC license?" This gives the licensee an opportunity to reveal any relevant problems to the inspector.

#### **1.4.5.2 Exit Meetings**

An exit meeting, like an entrance meeting, is the inspector's meeting. It is conducted to present the preliminary inspection findings as the inspector views them at the conclusion of the inspection. It should be a brief restatement of the purpose and findings of this inspection. It should be based on sound facts and observations. The inspector should also point out that any conclusions expressed in the exit meeting are predecisional in nature and are subject to NRC management review prior to the NRC publishing its agency conclusions in an inspection report. The exit meeting should conclude with the inspector's overall conclusions from these facts and observations. The characterization of the findings should be carefully considered before they are presented. Apparent findings should be called that. The careful characterization and accurate communication of inspection findings is essential for any exit meeting.

Since the findings were clearly communicated to the licensee at the exit meeting, changes to those findings from further review of information, from additional information provided by licensee staff, or from subsequent management review should be made known to the licensee. The doctrine of no surprises in the inspection report should be applied.

### **1.5 Institutional Knowledge**

"Knowledge is of two kinds: we know a subject ourselves,  
or we know where we can find information upon it."  
Samuel Johnson (1709 - 1784)

#### **1.5.1 Introduction**

While being a competent professional in terms of academic and technological knowledge is important, the inspector can succeed only if he/she possesses detailed knowledge of the agency's policies and programs dealing with licensing, inspection, and enforcement. Initially, this knowledge is acquired through the orientation and training program for new inspectors but, as time goes on, the regulations are revised and new rules established, policies are established or modified, and new approaches are adopted. In order to be current in the program area, an inspector must become familiar with changes in regulations, recent NUREG documents and regulatory guides, Commission decisions, and new or revised inspection procedures and temporary instructions.

The inspector also needs to maintain general knowledge of other NRC programs and policies outside the one in which he/she is working. Such knowledge enables an inspector to put his/her efforts into better perspective and to represent the agency more effectively in contacts with licensees and the general public. Examples of topics that fall into the "general knowledge" category are the State relations/agreements programs, research studies, and assessment of inspection fees on licensees.

While this course will not go into detail on these methods (the qualification process will present key subjects in this area which are applicable to the inspector), the discussions below will describe some of the key constituents to NRC operations.

### **1.5.2 Policies**

The American Heritage Dictionary defines “policy” as:

“1. A plan or course of action, as of a government, political party, or business, intended to influence and determine decisions, actions, and other matters: American foreign policy; the company's policy.

2a. A course of action, guiding principle, or procedure considered expedient, prudent, or advantageous: Honesty is the best policy. b. Prudence, shrewdness, or sagacity in practical matters.”

The same dictionary defines “public policy” as:

“The basic policy or set of policies forming the foundation of public laws, especially such policy not yet formally enunciated.”

These terms are used frequently in the area of regulation, and it is important that the inspector understand how the term directs regulatory action. NRC policy is established by the commission as defined in the agency’s legislative mandate. While the staff of the NRC prepares and proposes policy, it is the commission that, through a collegial consultation and voting process, truly makes policy. Commission policy statements are numerous and diverse, ranging from the “Final Policy Statement - Conversion to the Metric System” to the “Commission Policy Statement on Protecting the Identity of Allegers and Confidential Sources” to the “Final Policy Statement on the Use of Probabilistic Risk Assessment Methods in Nuclear Regulatory Activities” to the “Reactor Safety Goal Policy Statement.”

As the definitions above indicate, policies are not codified requirements. While the inspector may well (and rightly) be expected to conform to policies of the commission, personnel policies, and other organizational policies as a condition of employment, the inspector may not compel a licensee to adhere to NRC policies. Frequently, licensees will voluntarily elect to conduct business in conformance with a particular policy; however, the inspector must be mindful of the fact that policy sets a “direction” for the development of regulations, and it is the regulations (and derivatives of the regulations, such as licenses and orders) that establish requirements incumbent on licensees.

**1.5.3 Procedures**

Organizations within the NRC have developed procedures for implementing higher-level policies or requirements. Sources for procedural development may include legislation (e.g. the AEA), Executive Orders of the President, policies developed by the commission, or management directives developed by the Executive Director for Operations. In regional offices, these higher-tier requirements are frequently made specific to the organization through the development of regional office instructions.

Procedures exist covering almost every aspect of agency business. From how to address an allegation to how to conduct an inspection to how to report time and attendance. It is incumbent upon the inspector to become familiar with the procedures that apply to his or her job function and to adhere to the guidance found therein. If the inspector does not feel that a given situation is addressed in a procedure, or that a procedure is inadequate or outdated, the inspector should go to NRC management for direction and recourse.

Typical sources of procedural guidance include:

- NRC Management Directives
- NRC Inspection Manual
- NRC Enforcement Manual
- NRC Field Policy Manual
- Regional Office Instructions

**1.5.4 Programs**

The American Heritage Dictionary defines "program" as "a system of services, opportunities, or projects, usually designed to meet a social need." Extending this definition to the NRC, broad areas of agency activity are grouped in "programs" and "program offices." Examples of NRC programs include the reactor oversight program, the enforcement program, the agreement state program and the federal, state and tribal liaison program. Frequently, the inspector will need to involve personnel from a number of programs and program offices to assess or characterize inspection findings. For example, a finding that indicates that a licensee may have been violating a technical specification surveillance requirement may require the involvement of regional support personnel (inspection program), enforcement staff (enforcement program), and possibly input from headquarters technical experts. In the interest of efficiency and accuracy, it is important that the inspector recognize the need to assemble the right collection of personnel to consider the issue.

Information on the various NRC program offices - their missions, their individual programs, and their organization - can be obtained from the NRC internal web site.

**1.6     Caution and Contingency Planning**

“I have learned to use the word impossible with the greatest caution.”  
Wernher von Braun

**1.6.1   Introduction**

In the course of conducting an inspection, the inspector possesses a great degree of autonomy. While the inspector's supervision can be contacted as-needed, and even with the presence of resident inspectors at a given facility, the inspector can easily wind up in a situation that was not anticipated when the inspection was planned. However, with appropriate prior planning and knowledge of NRC policies and procedural practices, the impact of unplanned events can be minimized. Several typical areas in which due caution and contingency planning play a role in the course of an inspection are presented below.

**1.6.2   Travel-Related Problems**

Before leaving on an inspection, each inspector is responsible for arranging airline flight, motel, and rental car reservations in agreement with local NRC administrative procedures. Make sure you are aware of the time of any meetings, the route to the site, and any arrangements for plant site access. Other arrangements that may need to be made include training in radiation protection and security training, designation of a work location, and establishing work hours.

The inspector should embark on travel mindful of the potential problems associated with getting to the field. Flight delays, automotive problems, navigational and paperwork problems can all contribute to failing to arrive on site when planned. To prepare for these difficulties, the inspector should travel with the phone numbers of key inspection contacts (both licensee and NRC) to provide the earliest possible notification of any late arrival information. As the licensee and the resident staff may have planned to attend an entrance meeting, notifying them of travel problems early can lessen the inconvenience of rescheduling both entrance meetings and any other meetings schedules as a part of the inspection. The inspector should also travel with emergency travel agency phone numbers and utilize this service to the extent necessary to solve travel problems. To reduce confusion in reaching an unfamiliar facility, the inspector should consider confirming directions with the resident staff prior and confirming travel times with the resident staff prior to beginning travel.

**1.6.3 Allegations**

Since December 1982 the NRC has followed a formal procedure, approved by the EDO, for handling allegations against NRC licensees and against vendors who supply goods and services to the nuclear industry. Because this subject is very important to the Commission and NRC management, the policy and procedure for handling allegations were incorporated into NRC Manual Chapter 0517, first issued in June 1987. The manual chapter was reviewed and approved by the Commission. Information on agency procedures for receiving, reviewing, and disposing of an allegation is now found in NRC Management Directive 8.8.

There is a probability that, from time to time, an inspector will be contacted by an individual with an allegation. Typically, the allegor is an employee or former employee of the licensee or vendor and the contact with the inspector may be in person, by telephone, or by letter. (NRC also receives anonymous allegations where the source is not known). Inspectors need to know what to do with the information that the allegor provides and how the NRC resolves each allegation it receives. While this course will not duplicate training provided separately on allegations, a number of points should be highlighted.

**1.6.3.1 Receiving an Allegation**

At any time, the inspector may be approached by allegor who has a safety concern. The allegor may indicate that he/she wants to provide some information to the NRC but does not want his/her supervisor to be aware of his/her direct contact with NRC. Oftentimes the allegor will contact the Office Allegations Coordinator (OAC) directly but in some cases the inspector is the initial point of contact. If the inspector is to be the point of contact, a compromise might be to have the allegation coordinator present or on the phone call.

The question then becomes one of a location where the allegor will feel comfortable while talking to the NRC representative. This could be the resident inspector's office, possibly space in the licensee's facilities if appropriate and private, or an offsite location. Before agreeing to meet an allegor offsite, the inspector should discuss the situation with the NRC supervisor. An offsite location could put the inspector in a compromising position. The NRC inspector should have another NRC employee present when interviewing an allegor at an offsite location.

Interviews with allegors are private; that is, in most cases no one will be present except the allegor and the inspector. However, the allegor at his/her discretion may have another individual present during the interview. Also, as stated above, the inspector should normally have another inspector present if the interview will be conducted outside the licensee/vendor facility or NRC-controlled space.

It is possible that the inspector may be called by an allegor, or may receive a letter or note that contains an allegation. Sometimes the allegor may not reveal his/her name. But the identification of the allegor, although highly desirable for follow-up contacts, is not a necessary condition for the information to represent an allegation.

Regarding whether the information provided by a licensee employee, or any other individual, is an allegation, the inspector does not have to make that decision. He/she can assume that the information constitutes an

allegation whenever someone provides negative information in confidence about a licensee's or vendor's performance. NRC takes a very liberal approach to interpreting the definition of what constitutes an allegation. The OAC in consultation with management will determine whether the case should be processed as an allegation. Additionally, the inspector does not determine whether the allegation contains safety significance. That determination also is made at a later time.

The inspector, as the NRC representative, must take each allegor seriously regardless of how he/she feels about the significance of the allegation or the reliability of the allegor. Most allegors are sincerely concerned about plant safety and the health and safety of the public. The inspector must listen respectfully to the allegor, ask questions that bring out all necessary details, and avoid any comments either favorable or unfavorable about the significance of the issue. Evaluation occurs at a later stage in the process. The atmosphere should be one of interest in obtaining accurate details of the allegor's concern so that the NRC can resolve the matter. The inspector should keep in mind that the process of making an allegation can be a very emotional one, with the allegor feeling that he is risking his job to do what he thinks is right. The inspector's demeanor will often define the allegor's opinion about the extent to which the agency is interested in uncovering safety issues. While the allegor may not provide feedback to the inspector on the process, he may well pass the information on to co-workers or even the press, NRC management, or the Office of the Inspector General.

The inspector should know what information is required from allegor. If the inspector is unaware of where allegation forms are at the resident office of the inspected facility, or is concerned that a specific facility is known to produce a large number of allegations, the inspector should consider carrying hard copy versions of the allegation form for quick reference. If this is done, however, the inspector should ensure that any form carried into the field is the most current revision. Similarly, the inspector should be very familiar with the NRC policy on identity protection and should be able to articulate that policy clearly to the allegor.

### **1.6.3.2 Processing Allegations in the Field**

Once an allegation has been received, the inspector must transmit the information to the appropriate NRC personnel in a timely fashion. Prompt reporting of an allegation to the inspector's supervisor and OAC is absolutely essential. This can be done orally and followed up shortly with a written report, or directly with a written report. The first action of the agency after receiving an allegation is an evaluation of the information to determine its safety significance. An allegation relating to an important safety issue will have a high priority for determining its validity.

Consequently, the inspector should travel with the telephone numbers of the inspector's supervisor and the allegation coordinator for the inspector's organization. If the inspector will be working back shifts, it is helpful to have the home phone number of these personnel. It is also helpful for the inspector to know the phone number for the NRC operations center in headquarters. Telephones at this location are manned continuously and headquarters operations officers can be very helpful at any hour of the day or night to contact any required NRC personnel.

### **1.6.4 Emergencies**

### 1.6.4.1 NRC Emergency Response

NRC has developed a plan (Management Directive 8.2, "NRC Incident Response Plan") for response to incidents involving licensed material and activities to fulfill its legislated mandate to protect the public health and safety. In its emergency response plan, NRC recognizes that there are two primary decision makers in a radiological emergency at a licensed nuclear facility: the licensee and the State or local government. The licensee has primary responsibility for mitigating the consequences of an event by taking the necessary and appropriate onsite protective actions and recommending such offsite protective actions as evacuation and sheltering. The State, or local government, has primary responsibility for implementing offsite protective actions based on a licensee's recommendation and its own assessment of the situation.

NRC has several roles in a radiological emergency at a licensed facility. The primary role is that of monitoring the activities of the licensee to ensure that appropriate protective actions are being taken to mitigate the consequences of the incident and to ensure that appropriate protective action recommendations are provided to offsite officials. In addition, NRC supports and assists State and local officials by performing independent assessments and confirming, when appropriate, the licensee's protective action recommendations. In addition to interfacing with offsite officials, the NRC response organization becomes the conduit of technical information from the facility to other Federal agencies and keeps the media informed of the NRC's actions and knowledge of event status. NRC may be required, in an extreme and unique situation, to take action to direct the licensee's response by issuing formal orders to the licensee and then monitoring implementation of actions ordered. The Commission's intent is that this authority not be exercised from headquarters, but might be exercised by the regional administrator at the site, based on situation-specific approval by the NRC Chairman.

The NRC response to an incident usually begins with the headquarters operations officers located in the NRC Operations Center. The NRC Operations Center is manned 24 hours a day. Direct telephone lines have been installed to each commercial nuclear reactor facility and some fuel facilities. This telephone network is referred to as the emergency notification system (ENS). The purpose of the ENS is to provide the NRC with immediate reporting of significant events to which immediate NRC action may be required to protect the public health and safety or to which NRC needs accurate and timely information to respond to heightened public concern. Reporting criteria are contained in the regulations so that licensees may determine the need to report. For reactor and fuel cycle and materials facilities required to have an emergency plan, initial notifications of events are reported to the NRC Operations Center. The NRC's response to both emergencies and non-emergencies is coordinated in this communication center. Headquarters operations officers screen the incoming calls. All reports of significant events are brought to the attention of the appropriate regional duty officer and the emergency officer, for either NMSS or NRR (on call 24 hours a day). Decisions to activate the NRC emergency response organization are usually made cooperatively by regional and headquarters upper management through these duty officers.

NRC's philosophy is that the accident site is the best place to gather information, understand the situation, and interface with the licensee and local officials. Therefore, NRC procedures for serious accidents are geared toward getting the appropriate people to the site as soon as possible (within two to eight hours). Depending on the safety significance of the event reported, the event could result in special actions by the

NRC such as implementation of an augmented inspection team (AIT) or an incident investigation team (IIT).

Event reporting is defined in 10 CFR 50.72 and 50.73. Telephonic and written preliminary notification (PN) by the NRC is made as an early notice of an event of possible safety or public interest. This information is presented as initially received without complete verification or evaluation and is essentially all that is known at the time notification is made. The objectives of this notification system are to promptly provide to the Commissioners and other NRC management new and current information on matters that are of significant safety concern or have, or potentially could have, high public interest, and to provide to others in the NRC, on a less urgent basis, information on matters that are the subject of PNs.

#### **1.6.4.2 Inspector Response to Emergencies**

Operational events can occur at NRC-regulated facilities at any time. For particularly significant events or conditions, the licensee may implement their emergency plan. If this occurs, the inspector must know how to respond. For certain declared emergencies, the licensee must account for all personnel - licensee, NRC and otherwise - who have been granted access to the facility. To accomplish this accounting, predetermined locations are typically established for personnel assembly. The visiting inspector must determine, before the inspection begins, where to report in such an event. Note that this location will vary from site to site. Inspectors should not assume that, because they are with the NRC, they - by default - belong in the control room. Neither should they assume that because they are specialists without operational training they do not belong in the control room. It is very important that the inspector determine exactly where to go. Discussions with the licensee during site access processing or with the resident inspectors are effective ways to iron out this issue.

Inspectors who find themselves in a facility's control room during an operational event must be mindful of the fact that they may present an obstacle to the response of operators to emerging plant conditions. As a general rule applicable to both steady state operation and emergencies, inspectors should adhere to the licensee's rules for access to the control room and should avoid becoming a distraction to operators.

Some facilities allow inspectors to enter the control room freely, while others request that inspectors ask permission prior to entering. If a request for permission is required, the inspector should understand that the licensee will not actually deny the inspector access to any plant area (regulations require that inspectors be granted access), but that responsible control room operation demands that operators maintain a safe, clutter free and (reasonably) quiet environment. Allowing excessive numbers of people in the control room simultaneously can work against this goal. This necessitates discipline in determining who is admitted to the control room and for what purpose.

As stated previously, inspectors can inadvertently present distractions from safe operation. As a rule, the inspector should limit conversation with control room personnel to that which is required in the course of inspecting. Similarly, the inspector should not crowd operators who are performing control board evolutions. Neither should inspectors place themselves between an operator and a control or indication without first getting permission. Finally, inspectors should avoid coming into contact with the control boards. "Hands in pockets" is a good rule of thumb for control board walkdowns.

As important as the guidelines above are during normal plant operations, they become even more important during an operational event or declared emergency, when tensions may run high and where clear thinking and stress control become important. As stated above for normal operations, the inspector must limit discussion to that which is truly required. The causal factors and timeline for most events can be ascertained after the facility has been stabilized through reviews of plant data and interviews with operators. During an event, the inspector should limit his interaction to that required to characterize the event and to determine that public health and safety are being maintained. This may, during an event, involve only obtaining a "big picture" description of the event and determining that the licensee has appropriately established the correct emergency action level (if necessary). Even in obtaining this information, the inspector should try to speak with knowledgeable personnel who are not directly involved with operating the controls of the facility. Examples of this type of personnel are operations department management, off-duty operators who may have been called in, the plant manager, or a member of the emergency response organization.

# EXPECTATIONS FOR NRC INSPECTORS

## LEARNING OBJECTIVES

- STATE THE DEFINITION OF "OBJECTIVITY" AS IT APPLIES TO INSPECTION.
- DESCRIBE THE LIMITS OF INSPECTOR AUTHORITY AT A REGULATED FACILITY (I.E. DESCRIBE WHAT A LICENSEE IS REQUIRED TO PROVIDE AN INSPECTOR AND THE LIMITS OF WHAT AN INSPECTOR CAN DO).
- EXPLAIN NRC EXPECTATIONS FOR INSPECTOR DRESS, FITNESS FOR DUTY, AND WORKING HOURS.
- DESCRIBE THE ATTRIBUTES OF INSPECTOR COMMUNICATIONS WITH LICENSEE PERSONNEL.
- DESCRIBE WHO IN THE LICENSEE AND NRC ORGANIZATIONS SHOULD BE INFORMED REGARDING SIGNIFICANT SAFETY ISSUES AND WHO SHOULD BE IN ATTENDANCE AT ENTRANCE AND EXIT MEETINGS..
- DESCRIBE THE TYPE OF INFORMATION THAT SHOULD BE CONVEYED AT ENTRANCE AND EXIT MEETINGS.
- DESCRIBE THE DIFFERENCES BETWEEN POLICY, PROGRAMS AND PROCEDURES.
- EXPLAIN THE ELEMENTS OF DEALING WITH ALLEGERS.
- EXPLAIN THE DUTIES AND RESPONSIBILITIES OF THE INSPECTOR DURING DECLARED ON-SITE EMERGENCIES.

# INSPECTOR MIND SET

- OBJECTIVITY:

"OBJECTIVITY EXISTS WHEN THE INSPECTOR IMPLEMENTS THE INSPECTION PROGRAM, INTERFACES WITH THE PUBLIC AND CONDUCTS PERSONAL AND ORGANIZATIONAL RELATIONSHIPS IN AN UNBIASED MANNER, FREE FROM BOTH PARTIALITY AND ANTAGONISM TOWARD A LICENSEE OR VENDOR, OR THE EMPLOYEES OF A LICENSEE OR VENDOR, AS EVIDENCED BY PATTERNS OF THE INSPECTOR'S ACTIONS"

- OBJECTIVITY COMPRISED OF:

- INDEPENDENT TECHNICAL JUDGEMENT
- UNBIASED ATTITUDE TOWARD LICENSEE
- CONCLUSIONS BASED ON FACT

- INSPECTOR IS NOT...

- OUT TO "GET" LICENSEE
- OUT TO "COMMEND" LICENSEE
- OUT TO SHUT FACILITY DOWN
- OUT TO ENSURE CONTINUED OPERATION
- A CONSULTANT

## INSPECTOR DISCRETION

- CONTROL OF SAFEGUARDS INFORMATION
  - SENSITIVE NON-CLASSIFIED INFORMATION
- PROTECTION OF THIRD PARTY INFORMATION
  - PROPRIETARY INFORMATION
  - INPO DOCUMENTS
- ALLEGATION-RELATED INFORMATION
  - CONTENT OF ALLEGATIONS
  - ALLEGER IDENTITY PROTECTION
- CRITICISM OF OTHER LICENSEES OR NRC OFFICES

## INSPECTOR AUTHORITY

- ATOMIC ENERGY ACT AND ENERGY REORGANIZATION ACT AUTHORIZE NRC TO LICENSE, REGULATE, AND INSPECT NUCLEAR MATERIAL, FACILITIES, AND OPERATORS
- NRC NOT EMPOWERED TO REGULATE ALL NUCLEAR APPLICATIONS.
  - DOE FACILITIES NOT INCLUDED
  - DEFENSE POWER REACTORS NOT INCLUDED
- ACT AUTHORIZES NRC TO CONDUCT CIVIL INSPECTION AND INVESTIGATION
  - DOJ/FBI PURSUE CRIMINAL MATTERS
- AUTHORITY VESTED IN THE NRC DOES NOT RESIDE IN INDIVIDUAL INSPECTORS
  - INSPECTORS CANNOT EXECUTE A LICENSING ACTION
  - INSPECTORS CANNOT ISSUE ENFORCEMENT SANCTIONS
  - INSPECTORS CANNOT ISSUE "ORDERS"
- INSPECTOR'S AUTHORITY IS IN LINE WITH HIS/HER ROLE

## INSPECTOR AUTHORITY

- INSPECTOR IS A "FACT FINDER"
- SO, AN INSPECTOR:

MUST BE GRANTED "IMMEDIATE UNFETTERED ACCESS" TO FACILITIES  
(10CFR50.70(A)(3))

IS A DULY AUTHORIZED REPRESENTATIVE OF THE COMMISSION AND A LICENSEE WILL PERMIT INSPECTION "...OF HIS RECORDS, PREMISES, ACTIVITIES AND OF LICENSED MATERIALS IN POSSESSION OR USE, RELATED TO THE LICENSE OR CONSTRUCTION PERMIT AS MAY BE NECESSARY TO EFFECTUATE THE PURPOSES OF THE ACT (10CFR50.50(A))..."

COMPARES A LICENSEE'S ACTIVITIES TO THE STANDARDS SPECIFIED IN REGULATIONS OR IN BINDING COMMITMENTS

INSIST ON COMPLIANCE WITH REGULATIONS AND LICENSE CONDITIONS

### BUT...

THE INSPECTOR MUST PRESENT PROPER IDENTIFICATION AND THE LICENSEE MUST BE ALLOWED TO CONDUCT APPLICABLE ACCESS CONTROL MEASURES FOR SECURITY, RADIOLOGICAL PROTECTION, AND PERSONAL SAFETY

THIS DOES NOT ALLOW INSPECTORS TO CONFISCATE RECORDS OR DEMAND REPRODUCTION OR ACCESS INFORMATION THAT THIS NOT RELATED TO A REGULATED ACTIVITY

THE INSPECTOR IS NOT AUTHORIZED TO COMPARE THE LICENSEE'S ACTIVITIES TO A STANDARD OF "EXCELLENCE" OR ATTEMPT TO COMPEL THE LICENSEE TO PURSUE AN ACTION BASED ON "GOOD PRACTICE"

THE INSPECTOR MAY NOT CREATE A "BACKFIT" SITUATION

# BACKFIT

DEFINED IN MANUAL CHAPTER 0514 AND 10 CFR 50.109 AS:

"THE MODIFICATION OF OR ADDITION TO SYSTEMS, STRUCTURES, COMPONENTS, OR DESIGN OF A FACILITY; OR THE DESIGN APPROVAL OR MANUFACTURING LICENSE FOR A FACILITY; OR THE PROCEDURES OR ORGANIZATION REQUIRED TO DESIGN, CONSTRUCT OR OPERATE A FACILITY; ANY OF WHICH MAY RESULT FROM A NEW OR AMENDED PROVISION IN THE COMMISSION RULES OR THE IMPOSITION OF A REGULATORY STAFF POSITION INTERPRETING THE COMMISSION RULES THAT IS EITHER NEW OR DIFFERENT FROM A PREVIOUSLY APPLICABLE STAFF POSITION...."

COMMISSION ALLOWS BACKFITS ONLY WHEN:

- SUBSTANTIAL INCREASE IN OVERALL PROTECTION INVOLVED, AND
- DIRECT AND INDIRECT COSTS ARE JUSTIFIED IN VIEW OF THE INCREASED PROTECTION

## COMMITTEE TO REVIEW GENERIC REQUIREMENTS (CRGR)

- REVIEWS PROPOSED BACKFITS
- RECOMMENDS TO EDO THE APPROVAL OR DISAPPROVAL OF BACKFITS
- OBJECTIVES ARE:
  - TO ELIMINATE OR REMOVE UNNECESSARY BURDENS ON LICENSEES
  - TO REDUCE THE EXPOSURE OF WORKERS TO RADIATION IN IMPLEMENTING REQUIREMENTS
  - CONSERVE NRC RESOURCES WHILE ENSURING ADEQUATE PROTECTION OF PUBLIC HEALTH AND SAFETY

## INSPECTOR BEARING

- APPROPRIATE DRESS
  - DRESS APPROPRIATELY FOR THE PLANNED ACTIVITY
- READY FOR DUTY
  - RESTED AND ALERT
  - NO ALCOHOL IN PREVIOUS 5 HOURS
- A FULL DAY'S WORK FOR A FULL DAY'S PAY
  - DAY BEGINS UPON ARRIVAL AT SITE AND ENDS ON LEAVING SITE
- CONSIDERATION FOR LICENSEES' OPERATIONS
  - INSPECTIONS ARE, BY DEFINITION, BURDENSOME
  - DON'T ADD TO BURDEN BY UNNECESSARILY DISRUPTING WORK
  - SCHEDULE ACTIVITIES AND INTERVIEWS BEFOREHAND TO THE EXTENT PRACTICABLE
  - DON'T CREATE A DISTURBANCE IN THE CONTROL ROOM
    - LIMIT DISCUSSIONS WITH OPERATORS TO BUSINESS-RELATED ISSUES
    - DON'T OBSTRUCT OPERATORS' ACCESS TO CONTROLS OR VIEWS OF INDICATIONS

## INSPECTOR BEARING

- AVOIDING SITUATIONS WHEREIN OBJECTIVITY CAN BE QUESTIONED
  - DO NOT SOCIALIZE WITH LICENSEE EMPLOYEES (UNLESS PRIOR RELATIONSHIP EXISTS)
  - MAINTAIN A BUSINESSLIKE DEMEANOR
  - ADHERE TO GOVERNMENT-WIDE ETHICS REGULATIONS
  - WHEN IN DOUBT CONSULT SUPERVISOR OR OGC

## COMMUNICATIONS

- USE MODERATE, UNBIASED LANGUAGE
  - APPLIES TO ALL COMMUNICATION INSIDE AND OUTSIDE NRC
  - DON'T "CRY WOLF"
  - DON'T BE OVERLY SUBJECTIVE
- DO NOT THREATEN LICENSEE
  - NEVER THREATEN LICENSEES WITH NRC ACTION TO ACHIEVE A DESIRED OUTCOME
    - THE AUTHORITY TO MODIFY, SUSPEND, OR REVOKE LICENSES DOES NOT RESIDE IN THE INSPECTOR
    - THE AUTHORITY TO ISSUE AN ORDER DOES NOT RESIDE IN THE INSPECTOR
    - THE AUTHORITY TO ISSUE ENFORCEMENT ACTIONS DOES NOT RESIDE IN THE INSPECTOR
  - BE SENSITIVE TO THE LICENSEES' TENDENCIES TO DEFER TO NRC
    - DON'T LEAVE INCORRECT IMPRESSIONS ABOUT NRC EXPECTATIONS
    - DON'T "USE" LICENSEES' DESIRE TO BE ON GOOD TERMS WITH NRC TO LEVERAGE AN ACTION THAT IS OUTSIDE THE REGULATIONS (E.G. GOOD PRACTICES)

## COMMUNICATIONS

- TALK TO THE RIGHT PERSON
  - LICENSEE'S ORGANIZATION
    - ESTABLISH POINTS OF CONTACT (LICENSING DEPT PERSONNEL, TECHNICAL PERSONNEL, SUPERVISORY AND MANAGEMENT PERSONNEL)
    - WHEN IN DOUBT, TALK TO NRC RESIDENT INSPECTORS
  - NRC ORGANIZATION
    - RESIDENT INSPECTORS FOR SITE-SPECIFIC AND SOME ISSUE-SPECIFIC INFORMATION
    - BRANCH CHIEFS FOR INSPECTION-RELATED ISSUES
    - NRC TECHNICAL SPECIALISTS FOR ISSUES BEYOND YOUR EXPERTISE
    - ALLEGATIONS AND ENFORCEMENT STAFFERS FOR ISSUES IN THOSE PROGRAMS

# COMMUNICATIONS

- INCLUDE THE RIGHT INFORMATION
  - ENTRANCE MEETINGS
  - WHAT IS TO BE INSPECTED (INSPECTION SCOPE)
  - WHAT RECORDS, PERSONNEL, AND ACTIVITIES NEED TO BE MADE AVAILABLE
  - OPPORTUNITIES FOR DEBRIEFINGS AND SCHEDULING THE EXIT MEETING
- EXIT MEETINGS
  - BRIEF RESTATEMENT OF PURPOSE OF INSPECTION
  - SUMMARY OF FINDINGS
  - POINT OUT THAT FINDINGS ARE PREDECISIONAL AND SUBJECT TO INTERNAL REVIEW AND MODIFICATION
  - GENERAL CONCLUSIONS BASED ON FACTS AND OBSERVATIONS

## INSTITUTIONAL KNOWLEDGE

- HOW THE NRC WORKS
- HOW NRC REGULATIONS AND OTHER DOCUMENTS INTERRELATE
- THE CONTENT OF REGULATIONS AND OTHER DOCUMENTS RELATED TO YOUR SPECIALTY AREA
- GENERAL UNDERSTANDING OF REQUIREMENTS OUTSIDE YOUR SPECIALTY AREA
- MAINTAINING KNOWLEDGE CURRENT

# POLICIES

- "POLICY" DEFINED:

"1. A PLAN OR COURSE OF ACTION, AS OF A GOVERNMENT, POLITICAL PARTY, OR BUSINESS, INTENDED TO INFLUENCE AND DETERMINE DECISIONS, ACTIONS, AND OTHER MATTERS: AMERICAN FOREIGN POLICY; THE COMPANY'S POLICY.

2A. A COURSE OF ACTION, GUIDING PRINCIPLE, OR PROCEDURE CONSIDERED EXPEDIENT, PRUDENT, OR ADVANTAGEOUS: HONESTY IS THE BEST POLICY. B. PRUDENCE, SHREWDNESS, OR SAGACITY IN PRACTICAL MATTERS."

- "PUBLIC POLICY" DEFINED:

"THE BASIC POLICY OR SET OF POLICIES FORMING THE FOUNDATION OF PUBLIC LAWS, ESPECIALLY SUCH POLICY NOT YET FORMALLY ENUNCIATED."

- NRC REGULATORY POLICY IS MADE BY THE COMMISSION ITSELF

- STAFF DEVELOPS POLICY OPTIONS
- COMMISSION VOTES ON ACCEPTING OPTIONS OR ACCEPTING OPTIONS AS MODIFIED BY THE COMMISSION

- POLICIES ARE NOT REGULATORY REQUIREMENTS. THEY FORM THE BASIS FOR REGULATION AND THE DIRECTION IN WHICH REGULATION WILL PROCEED.

- THE INSPECTOR MAY NOT FORCE A LICENSEE TO ADHERE TO A POLICY UNLESS IT HAS BEEN CODIFIED OR MADE PART OF A LICENSE CONDITION OR ORDER.

## PROCEDURES

- PROCEDURES DEVELOPED TO IMPLEMENT HIGHER-LEVEL POLICIES OR MANDATES WITHIN THE NRC
- SOURCES FOR PROCEDURES INCLUDE LEGISLATION, EXECUTIVE ORDERS OF THE PRESIDENT, COMMISSION POLICIES, OR MANAGEMENT DIRECTIVES AND DECISIONS
- INSPECTOR MUST BECOME FAMILIAR WITH THE PROCEDURES THAT APPLY TO THE JOB FUNCTION AND ADHERE TO THEM.
- IF THE INSPECTOR FEELS A PROCEDURE IS FLAWED OR IS INADEQUATE, MANAGEMENT SHOULD BE CONTACTED
- TYPICAL SOURCES OF PROCEDURAL GUIDANCE:
  - NRC MANAGEMENT DIRECTIVES
  - NRC INSPECTION MANUAL
  - NRC ENFORCEMENT MANUAL
  - NRC FIELD POLICY MANUAL
  - REGIONAL OFFICE INSTRUCTIONS

## PROGRAMS

- BROAD AREAS OF NRC ACTIVITY ARE GROUPED IN "PROGRAMS" AND "PROGRAM OFFICES"
- EXAMPLES OF PROGRAMS AND PROGRAM OFFICES:
  - REACTOR OVERSIGHT PROGRAM (PROGRAM OFFICE: OFFICE OF NUCLEAR REACTOR REGULATION)
  - ENFORCEMENT PROGRAM (PROGRAM OFFICE: OFFICE OF ENFORCEMENT)
  - FEDERAL, STATE, AND TRIBAL LIAISON PROGRAM (PROGRAM OFFICE: OFFICE OF STATE & TRIBAL PROGRAMS)
  - THE AGREEMENT STATE PROGRAM (PROGRAM OFFICE: OFFICE OF STATE & TRIBAL PROGRAMS)
  - NRC SECURITY PROGRAM (PROGRAM OFFICE: OFFICE OF ADMINISTRATION)
  - SPENT FUEL STORAGE INSPECTION PROGRAM (PROGRAM OFFICE: OFFICE OF NUCLEAR MATERIAL SAFETY AND SAFEGUARDS)

## TRAVEL-RELATED PROBLEMS

- BEFORE TRAVEL
  - BE AWARE OF ANY PLANNED MEETINGS ON SITE
  - BE INFORMED OF ROUTE TO THE SITE
  - BE FAMILIAR WITH SITE ACCESS ARRANGEMENTS
  - ENSURE SITE ACCESS TRAINING IS UP-TO-DATE
  - ENSURE INCLUSION ON THE “GOOD GUY” LIST (PARTICULARLY WHEN TRAVELING BETWEEN REGIONS AND FROM HEADQUARTERS)
- POTENTIAL TRAVEL-RELATED PROBLEMS
  - FLIGHT DELAYS
  - AUTOMOTIVE PROBLEMS
  - NAVIGATION PROBLEMS
- PREPARE BEFOREHAND BY TRAVELING WITH:
  - PHONE NUMBERS FOR KEY CONTACTS (LICENSEE AND NRC) AND EMERGENCY PHONE NUMBER FOR TRAVEL AGENCY
  - CONFIRM DIRECTIONS AND ACCESS PROCESS WITH RESIDENT INSPECTORS
  - BE PREPARED TO PROVIDE EARLY NOTIFICATION TO LICENSEE/NRC OF LATE ARRIVAL

## ALLEGATIONS

- MANAGEMENT DIRECTIVE 8.8 AND OFFICE INSTRUCTIONS DIRECT ACTIVITIES RELATED TO ALLEGATIONS
- RECEIVING ALLEGATIONS
  - TYPICAL ALLEGER IS LICENSEE EMPLOYEE WITH A SAFETY CONCERN, BUT CAN ALSO BE MEMBER OF PUBLIC, EX-EMPLOYEE, ETC
  - SOME CONTACT ALLEGATIONS COORDINATOR DIRECTLY, OTHERS APPROACH THE INSPECTOR
  - INSPECTOR MUST BE SENSITIVE TO IDENTITY PROTECTION AND DISCUSSIONS WITH ALLEGER SHOULD BE IN A PLACE THE ALLEGER IS COMFORTABLE WITH
  - INSPECTORS SHOULD NOT MEET ALLEGERS OFF-SITE WITHOUT FIRST DISCUSSING THE MATTER WITH SUPERVISION AND WITHOUT ANOTHER NRC EMPLOYEE PRESENT
  - WHETHER OR NOT THE INFORMATION PROVIDED BY THE ALLEGER IS AN "ALLEGATION" AS DEFINED BY THE PROGRAM WILL BE DETERMINED BY OTHERS AFTER THE INFORMATION IS OBTAINED - THE INSPECTOR SHOULD TREAT THE INFORMATION PROVIDED BY ANY CONCERNED INDIVIDUAL AS AN ALLEGATION
  - INSPECTOR MUST LISTEN RESPECTFULLY TO ALLEGATION AND ASK QUESTIONS TO BRING OUT THE NECESSARY INFORMATION - MUST KNOW WHAT INFORMATION IS REQUIRED

## ALLEGATIONS

- PROCESSING ALLEGATIONS IN THE FIELD
  - ONCE RECEIVED, THE ALLEGATION MUST BE TRANSMITTED TO APPROPRIATE NRC PERSONNEL IN A TIMELY FASHION
  - INSPECTORS CAN GET SUPPORT FOR REPORTING ALLEGATIONS FROM:
    - SUPERVISOR (TRAVEL WITH SUPERVISOR'S WORK AND HOME PHONE NUMBERS)
    - OFFICE ALLEGATIONS COORDINATOR
    - HEADQUARTERS OPERATIONS OFFICERS/OPS CENTER - FOR AFTER HOURS HELP IN CONTACTING NRC PERSONNEL FOR SUPPORT
  - FOR ALLEGATIONS OF SIGNIFICANT SAFETY ISSUES, REAL-TIME DETERMINATION OF REQUIRED ACTIONS MAY BE NECESSARY - CONTACT SUPERVISOR PRIOR TO ACTING
  - ALL ALLEGATIONS MUST BE DOCUMENTED - BECOME FAMILIAR WITH THE LOCATION OF FORMS, OR TRAVEL WITH BLANK FORMS.

## EMERGENCIES

- NRC EMERGENCY RESPONSE
  - NRC INCIDENT RESPONSE PLAN DOCUMENTED IN MANAGEMENT DIRECTIVE 8.2
  - CONCEPT OF EMERGENCY RESPONSE:
    - TWO PRIMARY DECISION MAKERS IN A RADIOLOGICAL EMERGENCY - LICENSEE AND STATE OR LOCAL GOVERNMENT
    - NRC ROLE:
      - MONITOR LICENSEE ACTIONS TO ENSURE APPROPRIATE PROTECTIVE ACTION RECOMMENDATIONS ARE PROVIDED TO OFF-SITE OFFICIALS
      - SUPPORT STATE AND LOCAL OFFICIALS BY PERFORMING INDEPENDENT ASSESSMENTS
      - CONDUIT OF TECHNICAL INFORMATION TO OTHER FEDERAL AGENCIES
      - IN EXTREME AND UNIQUE SITUATIONS, DIRECT LICENSEE'S RESPONSE BY ISSUING ORDERS

## INSPECTOR RESPONSES TO EMERGENCIES

- DETERMINE, UPON ARRIVAL AT FACILITY, WHERE TO REPORT IF AN EMERGENCY IS DECLARED
- IF EMERGENCY IS DECLARED, REPORT TO THAT LOCATION AND PROVIDE SUPPORT AS DIRECTED BY THE SENIOR RESIDENT INSPECTOR
- IF IN THE CONTROL ROOM WHEN THE EVENT OCCURS:
  - BE MINDFUL THAT INSPECTOR MAY PRESENT AN OBSTACLE TO OPERATOR RESPONSE
  - ADHERE TO LICENSEE'S RULES FOR ACCESS TO CONTROL ROOM AREAS
  - LIMIT CONVERSATIONS TO THOSE THAT ARE ABSOLUTELY REQUIRED - TRY TO TALK WITH KNOWLEDGEABLE PERSONNEL NOT INVOLVED IN RESPONDING TO THE EVENT
  - DO NOT CROWD OR DISTRACT OPERATORS
  - DO NOT GET IN THE WAY OF CONTROL ROOM INDICATIONS WITHOUT PERMISSION
  - AVOID COMING INTO CONTACT WITH CONTROL BOARDS
- THROUGHOUT EMERGENCY, TRY TO GET THE "BIG PICTURE" OF THE EVENT AND THE LICENSEE'S EMERGENCY ACTION LEVEL DETERMINATIONS

## STUDENT MANUAL

### Expectations for Inspectors Seminar (EIS) CASE STUDY-1 PART A

The senior resident called you at home to tell you he has the flu and won't be in today.

Your neighbor who works at the Training Center called early to see if he could ride to work with you. Since you are both going to the picnic after work, he asked for a ride home after the festivities are over. His car is in the shop for extended repairs.

At the licensee's work planning meeting this morning, you heard that the problem with the sticking fuel racks on the "West" engine of the "A" emergency diesel generator was attributed to the recent painting of the engine. Both engines had been repainted, but the "East" engine in the tandem unit appeared to operate normally. The Maintenance Department is in the process of removing the paint that appears to be the problem with the "West" engine. The technical specification 72-hour time limit in the action statement for Technical Specification 3.8.1.1(Electrical Power Systems AC Sources- Operating) expires at 8:10 p.m. today.

You had planned to look at onsite engineering support today by investigating engineering's level of involvement in evaluating licensee events reported under 10 Code of Federal Regulations 50.73. You are reminded of the standard comments in previous inspection reports that "Engineering was sometimes slow to react to issues or to grasp their significance," and "closely related to this issue was engineering's occasional high threshold for formal recognition of issues."

You were concerned this morning about the rough draft Licensee Event Report (LER) on your desk for the turbine-driven auxiliary feedwater (TDAFW) pump overspeed event that occurred last evening. Although receiving information (in advance in this case) helps you to focus your thoughts, you wonder if the Plant General Manager expects you to comment on the content of the draft. As he told you last night during your phone conversation, the cause of the event is being attributed to the buildup of condensate in the steam line to the AFW turbine. You see no indication that additional engineering analysis will be conducted. You intend to look into this today. (The draft LER is in the Reference section.)

Your office answering machine also includes a message from the Plant Security Manager stating that an unescorted former employee who was recently fired was found inside the Protected Area. Security personnel apprehended the person and interrogated him. He told the security personnel that he gained access using his security badge so that he could collect some personal items in his old office. His previous position was with the Health Physics Department. He was fired because he was careless in handling radioactive check sources on more than one occasion. The security personnel confiscated his security badge, told him he was no longer authorized access to the Protected Area, and escorted him offsite.

Your Branch Chief called and left a message saying that a similar plant in another region had a problem last night in which reactor power reduction was not balanced with turbine load reduction and reactor coolant temperature (Tavg) decreased below the minimum for criticality.

He wants some specific background information from your plant before he calls the other region to get details. By noon, he would like to have answers to the following questions:

1. Is this limit specified in the technical specifications, the Final Safety Analysis Report (FSAR), or both? What are the specific references?
2. What is the basis for this temperature limit and where is it specified?
3. What action is required if reactor coolant temperature is below the limit during critical operations? Where is this specified in licensing design bases documents?

The last call was from your Project Manager at NRC Headquarters in the Office of Nuclear Reactor Regulation. He is doing some research on pressure locking and thermal binding of power-operated valves in safety-related systems. He wants to know which safety-related, power-operated valves at your plant are required to open on receipt of a safety injection signal. He wants to know which of these valves are gate valves. He also would like to know which of the gate valves have double disks. He would like to have the information by close-of-business today. Valve numbers, system, and function information would be fine.

The call from the Project Manager reminded you that you intended to inspect emergency diesel and power-operated valve maintenance and engineering support today. In preparation for this inspection, you decided to review three plant trouble reports submitted over the last year involving power-operated valves and an incident involving one of the emergency diesel generators that occurred during the startup following the recent outage. The information contained in these reports with your earlier notes is provided in the reference section of this case study. You also reviewed the licensee memorandum in the reference section, SUBJECT: Analysis of Valve Inoperability Caused by Motor-Operator Failures. You decide to look at this information now.

You had previously decided to observe the post-maintenance testing of Residual Heat Removal System (RHR) cold leg injection Motor Operated (MO) isolation valve MO 8809A. The valve operating circuit was modified to ensure motor-valve operability under degraded voltage conditions. A description of the valve-operating circuit and the accompanying figure are included in the reference section of this manual. The figure reflects the design change to the circuit. Since the normal mode 1 (operation at Power) operating state of this valve is open with control power removed, the licensee saw no problem with the technical specification Action requirement for Residual Heat Removal (RHR) system operability while completing this modification with the valve in the open position. The modification was completed over a five-day period. MO 8809B will be modified next week.

When you arrive to observe the test, you are told that the licensee will use this opportunity to conduct the American Society of Mechanical Engineers (ASME Boiler and Pressure Vessel Code) Section XI Inservice Valve Exercising Test, IWV-3410, required at least once every 3 months. As you recall, the licensee is required by ASME Section XI In-Service Testing Requirement IWV-3200 Valve Replacement, Repair, and Maintenance, to demonstrate that the performance parameters, which could be affected by the

replacement, repair or maintenance, are within acceptable limits. This includes control systems. When you point this out to the valve test engineer, he indicates that he understands the test is required and not optional.

When the test engineer requests the valve to be closed from the Control Room, the motor starts, operates under locked rotor conditions for about 5 seconds, and trips the motor supply breaker with no observed valve stem movement. An operator assisting in the test remembered that the valve was checked fully open using the manual handwheel before the modifications were started. He suggests that excessive torque may have been used in backseating the valve. The engineer decides now to authorize use of the handwheel to move the valve off the backseat. A second attempt to close the valve with the motor-operator is successful, and the stroke time is 15 seconds. The test procedure indicates that the valve should stroke fully closed in  $10 \pm 2.5$  seconds. When the valve is returned to the open position using the motor-operator to complete the test, the motor again stalls out under locked rotor conditions and trips the motor supply breaker with the valve indicating open after 10 seconds. At this point, the test engineer decides to leave the valve fully open with the control power removed as required for mode 1 operations while an analysis is completed on the observed operational problems of this valve. You intend to verify that the operating times are within specifications.

You returned to your office to find a call from the Plant General Manager saying that the "B" Emergency Diesel Generator failed the daily Surveillance Requirement to demonstrate operability that must be conducted while the "A" train emergency diesel generator is inoperable. Since Technical Specification 4.8.1.1.2.a.6 was due to be conducted in the next 48 hours, the licensee elected to load the "B" generator to 2000 KW and operate it for one hour to meet the more restrictive requirements of this surveillance rather than conducting Technical Specification 4.8.1.1.2.a.5, which requires that the diesels start and reach rated speed.

Approximately 30 minutes into the test run, the "East" engine of the "B" train tandem diesel generator tripped on high jacket cooling water temperature at an indicated 200°F and, the "West" engine tripped from an over-temperature condition of 190°F. The initial concern was Asiatic clam fouling of the jacket water coolers for both engines. The "B" train was declared to be inoperable at 4:00 p.m.

Maintenance to remove the paint on the "West" engine of the "A" emergency diesel generator is estimated to require one more hour, at which time the diesel generator will be tested using Technical Specification 4.8.1.1.2.a.5. This verifies that the diesels start and reach rated speed. The maintenance crew has started cleaning the jacket water coolers for the "B" train.

The "West" engine of the "A" train emergency generator is subsequently tested using Technical Specification 4.8.1.1.2.a.5, and the diesels successfully reach rated speed at 5:00 p.m., 3 hours and ten minutes before the 72-hour time limit was due to expire. On conclusion of the test, the "A" train generator was declared to be operable. Although the 12 KW cooling water system "keep warm" heater for the "West" engine of the "A" train was noted to be inoperable, this was not considered a problem in the assessment of the capability of the generator to fulfill its safety-related functions. This heater will be repaired or replaced after the "B" train generator is returned to service. The estimate for cleaning the jacket water coolers is 48 hours. The

Technical Specification clock started when the second "B" train diesel tripped on high jacket cooling water temperature.

When you return to your office, you find a draft report on your E-Mail from a fellow inspector at an almost identical plant in another region. She occasionally sends you information because she is an old friend and exchanging information informally has been helpful in the past. The report is in the Reference section.

As you read her report, you note that it is of more than a passing interest. You will need to get your thoughts together on how to deal with the licensee on this topic.

After leaving work at 6:00 p.m., you go to the Training Center to attend the picnic with your wife. Your neighbor is selling chances for a prize of \$100 to be presented to your favorite charity. You buy five chances. You have a beer with your hamburger and talk to several senior management people. The drawing for the \$100 prize shows you to be the winner. The newspaper photographer takes a photo of you receiving a check from the head of the training center. As you leave the picnic at 7:00 p.m., you notice a reactor operator with a beer. You vaguely remember that he was on the back shift last night.

## **VALVE MO 8809A AND MO 8809B OPERATING CIRCUIT (SEE ATTACHED FIGURE 1)**

In the circuit for operating valve MO 8809A, control power is transformed from incoming motor leads. The stop switch is normally closed providing power up to the open and closed switches and contacts. The circuit is shown de-energize with the valve in the fully open position and control power locked out to prevent closing (contacts L01 and L02 are open).

### **CLOSING OPERATION**

When the "close" switch is operated, the closing intermediate relay coil "A" is energized if control power is restored (contacts L01 and L02 are closed). Lockout of control power to prevent valve closure is required in modes 1, 2, and 3 for MO 8809A and 8809B.

When closing intermediate relay coil "A" is energized, contact A1 is closed thereby energizing the main closing relay coil "CL". This relay coil closes the main line (motor leads) "CL" contacts to start the motor in the "close" direction. The "CL" contact around the close switch is also closed and the "CL" interlock contact in series with the open intermediate relay coil "B" is opened to prevent simultaneous application of power to the open and close main line contacts.

The actuator will continue to move the valve stem in the close direction until the close direction torque or limit switches (L.S.) detect binding or full stem travel. Either of these indications will open a contact thereby de-energizing the closing intermediate coil "A". This will open the "A1" contact and de-energize the main closing relay coil "CL". The five "CL" contacts discussed above will then return to their original positions before the closing cycle began and the motor operator will be de-energize.

### **OPENING OPERATION**

The actuator can be operated in the open direction in the same manner as described for the closing cycle.

Starter circuits such as this have two primary functions: 1) to change power phase rotation, which changes the direction of motor rotation, and 2) to provide mechanical and electrical safety interlocks that prevent the contacts for both directions of valve movement being closed at the same time, which would cause a direct short between phases. The operation of the reversing starter is based on using a small control current to control the larger motor current through electromagnetic switching of contacts. The coils shown in figure 1 operate the main contacts of the starter when an open or close pushbutton is pushed.

The intermediate relay coils "A" and "B" were added in a design modification to ensure motor-valve operability under degraded voltage conditions. A design review indicated that under

worst case low voltage conditions, the main "CL" and "OP" relay coils, which were located where the new coils "A" and "B" are now, might not receive sufficient operating voltage because of line voltage losses in the cabling between the Control Room and the Motor Control Centers (MCC) where the relays are located. The power requirement for the intermediate coils is much lower in the new design, and the main relay coils receive full line voltage in the modified design.

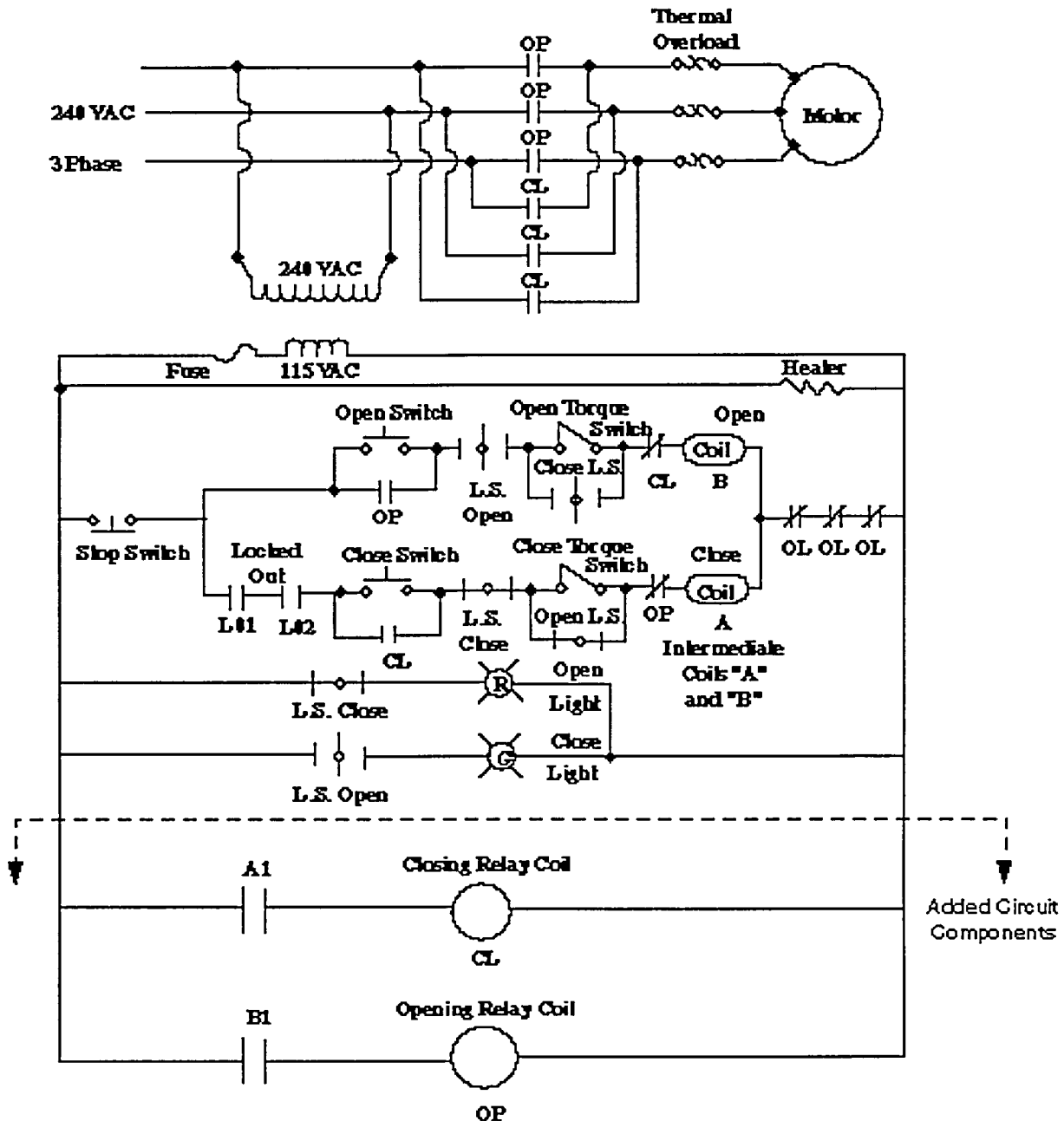


Figure 1. Valve Operating Circuit

## SUMMARY OF PLANT TROUBLE REPORT #1

### Stroke Time Test on Motor-Operated Valve MO-112B, Suction from Volume Control Tank

The trouble report indicated that the valve was tested under the following conditions:

1. The charging system was in a normal lineup.
2. Charging pumps were not operating.
3. The plant was in a hot shutdown condition.

The valve did not fully close as required to perform its safety function to isolate charging pump suction on the volume control tank when safety injection is initiated.

The licensee conducted a root cause analysis that determined the cause to be an improperly set torque switch and the use of an unqualified lubricant. The licensee lubricated the valve with a qualified lubricant and reset the torque switch to the proper value. The valve was then retested and met the FSAR table 6.3-7 stroke time. The licensee declared the valve operable and closed out the trouble report. Three months later, the valve failed the stroke time test again, and the earlier corrective action was repeated.

You had some questions in mind after reading this report.

1. What other factors could have contributed to the stroke time test failure?
2. Were the licensee's actions appropriate for the test failures?
3. What additional licensee actions seem to be indicated?
4. What if this valve problem is not an isolated incident?
5. Where do I look for regulatory guidance in this case?
6. Was the valve tested for stroke time under the required conditions?

## SUMMARY OF PLANT TROUBLE REPORT #2

### Failure of Pressurizer Power-Operated Relief Valve (PORV) Block Valves to Close

The unit was in hot shutdown increasing Reactor Coolant System (RCS) pressure while preparing for reactor startup when a valve gasket failed in a Reactor Coolant Pump (RCP) seal injection line. The RCPs were secured, the charging pumps shut down, and the leak isolated. RCS pressure continued to increase, and PORV block valves were opened to reduce system pressure. (These block valves were closed during power operation to prevent RCS leakage through the PORVs.)

When the PORV block valves were opened, the RCS pressure dropped due to the leaking PORVs. The operator unsuccessfully attempted to close the block valves from the control room. Safety injection was initiated when the pressurizer pressure reached 1715 psig, approximately 13 minutes after the block valves were opened. The minimum pressure reached during the transient was 1460 psig; RCS temperature was 300°F.

A containment entry was made and the PORV block valves were closed manually about one hour after the event began. One block valve was found to be approximately one-quarter turn open, and the other was approximately one and one-quarter turns open. The Limitorque motor operators were determined to have stopped due to premature torque switch actuation. Subsequent investigation revealed the cause to be excessive friction between the packing and valve stem and inadequate gearbox lubrication. To correct these problems, the packing was replaced, the gearbox lubricated, and other general maintenance was performed.

The two PORV block valves were returned to service after PORV leakage was corrected and remained open during normal plant operation until a hydrostatic test procedure required that they be closed 8 months later. Attempts to close the valves from the control room again were unsuccessful. An operator was dispatched to the containment building and manually closed one of the valves on the first attempt. The second valve could not be closed manually using maximum recommended torque.

Eventually, the motor operator was used to unseat the valve from the backseat. When the closed position was reached, however, the motor did not de-energize and continued to apply torque. Continued motor operation caused three of the four yoke-to-bonnet bolts to break.

To correct these problems, the licensee replaced the packing, substituted a different lubricant for the valve stem, replaced the torque switch, and replaced the broken bolts with 125KSI strength rather than the original 70KSI strength bolts.

You had some questions in mind after reading this report:

1. What other factors could have contributed to the failure of the block valves to close and the failure of the yoke-to-bonnet bolts?

2. What was the history of testing during the 8 months between the two failures? What were the surveillance and inservice test requirements during this period?
3. Were the licensee's actions appropriate for the operational failures?
4. What additional actions seem to be indicated?
5. Is it possible that lessons learned from PORV block valve problems could be applied to other valves?
6. Where do you look for regulatory and non-regulatory guidance for these valve problems?

## SUMMARY OF PLANT TROUBLE REPORT #3

### Pressure Locking of Containment Sump Recirculation Gate Valves

In response to Generic Letter 89-10 "Safety-related, Motor-operated Valve Testing and Surveillance" about two years ago, the licensee concluded that both containment sump recirculation motor-operated gate valves might experience pressure locking during a design-basis loss-of-coolant accident, and could fail in the closed position as a result of increased pressure and temperature inside containment. The licensee submitted a report to the NRC stating that an analysis should be performed to determine the capability of the valves to open against pressure locking forces.

The analytical calculations that verified operability of the valves were performed approximately one year later as noted in a memorandum that closed out the action required by the trouble report. The memorandum did not contain the methods used or the results obtained in the calculations.

After reading the trouble report, you are reminded of 10 Code of Federal Regulations Part 50, Appendix B, Criterion XVI, Corrective Action, which requires that "measures shall be established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, deviations, defective material and equipment, and non-conformances are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and corrective action is taken to preclude repetition." (EMPHASIS ADDED)

On the other hand, you recall the NRC Inspection Manual Part 9900 Technical Guidance on 10 Code of Federal Regulations 50.59 issued April 9, 1996, which states "Regulatory commitments are specific actions that have been voluntarily agreed to or that have been offered by a licensee in docketed correspondence to the Commission on a voluntary basis. Unlike regulatory requirements contained in regulations, technical specifications, licenses and orders, regulatory commitments are not legally binding. Many regulatory commitments are not contained in the FSAR but in other docketed correspondence such as LERs, responses to notices of violations (NOVs) and responses to generic letters. Therefore, those commitments not contained in the FSAR are not controlled by 10 Code of Federal Regulations 50.59. Consequently, licensees have the ability to change docketed commitments not contained in the FSAR without informing the Commission."

These references appear to be at odds in this case, and you wonder if this delay in implementing corrective action warrants a closer look at the licensee's program for identifying and correcting problems.

DRAFT REPORT ON RESIDUAL HEAT REMOVAL  
PUMP DISCHARGE VALVE SINGLE FAILURE CONCERN

## **PROBLEM**

The inspector identified a single failure point in the control circuitry for the RHR system cold leg injection isolation valves (pump discharge valves) that could potentially cause valve closure, resulting in less flow during the Emergency Core Cooling System (ECCS) injection phase of an accident than assumed in the accident analysis.

## **CAUSE**

The single failure vulnerability was introduced into the valve control circuits during a design modification (intended to ensure valve operability under degraded voltage conditions) because of inadequate review of design basis documentation prior to implementing the modification.

## **SAFETY SIGNIFICANCE**

The failure of a RHR cold leg injection isolation valve in the closed position limits low pressure safety injection to two of the four RCS cold legs. The accident analyses assumes injection to three of the four cold legs. Therefore, failure of an RHR valve would result in a condition outside the plant licensing design basis.

## **DISCUSSION**

The RHR system design at this plant consists of two redundant trains; each train consists of pump suction lines from the refueling water storage tank and containment sump, RHR pump, heat exchanger, cold leg injection isolation valve, and injection line. However, each injection line supplies only two of the four RCS cold legs. The ECCS large break Loss of Coolant Accident (LOCA) analysis assumes injection to three of the four cold legs. Both RHR cold leg injection isolation valves (MO 8809A and MO 8809B) must remain open to ensure injection to three cold legs. A crossover line connects the RHR discharge lines upstream of the MO 8809A and B valves so that either RHR pump can provide flow to all four cold legs.

To ensure that the MO 8809 valves remain open, the original design included a control power lockout feature for each valve to prevent spurious or inadvertent closure. During normal plant operation the valves are left in the open position with control power locked out. Two deliberate operator actions are required to close a valve: 1) restoration of control power from the Control Room via a key-lock switch, and 2) subsequent manual actuation of the close pushbutton switch. The original valve control circuit design was such that any single component failure (e.g., a set of contacts) could not both restore control power and cause valve closure. The valve position indication status lights in the Control Room remain operable when control power is locked out, and separate status lights are provided to indicate when control power lockout is in affect. Once every 31 days in modes 1, 2, and 3, the valves were verified to be open with control power locked out in accordance with Technical Specification Surveillance Requirement 4.5.2.

The MO 8809 valve control circuit design discussed above is consistent with the single failure requirements of Criteria 34 and 35 of 10 Code of Federal Regulations 50, Appendix A

and is considered an acceptable method for providing protection against the loss of a safety function due to the single failure of an electrically-operated component in a fluid system. Criterion 34 requires a system to remove residual heat and Criterion 35 requires a system for emergency core cooling.

The licensee subsequently modified the control circuits for the RHR discharge valves as the result of a degraded bus voltage review. The review concluded that under worst case voltage conditions, the voltage available to pick up the closing relays might not be sufficient because of the relay's large power requirements and voltage losses in the cabling between the Control Room and the Motor Control Center (MCC) where the relays are located. The valve control circuits were modified by adding low power intermediate relays between the valve closing circuits in the Control Room and the closing relays at the MCCs. However, because of an inadequate review of the design basis for the original circuit design, the modification to add the intermediate relays introduced single failure points into the design. Specifically, a single failure of the closing relay A1 contacts could cause one of the MO 8809 valves to close, blocking RHR flow to two of the four cold leg injection lines. The original and modified valve control circuit designs are shown in figure 1.

The licensee plans to modify the control power lockout circuits for the MO 8809 valves during the next refueling outage to reestablish the design features that are considered necessary to prevent single failures from causing inadvertent valve closure. In the interim, the licensee will tag the power circuit breakers for the valve motors in the open position to prevent single failures from causing valve closure. Although the interim fix does not permit the restoration of power from the Control Room, the licensee has indicated that sufficient time exists for operator actions necessary to close one of the MO 8809 valves during the cold leg recirculation phase. The Emergency Operating Procedures (EOPs) have been revised to include the necessary steps for restoring power to and closing the valves. Valve position indication and Control Room alarms (when either MO 8809 valve is not in the fully open position) remain operable when the breakers are tagged open to allow detection of a mispositioned valve. The valve position indication will be checked each shift to verify that the MO 8809 valves are open. Appropriate plant personnel have been trained regarding the interim fix.

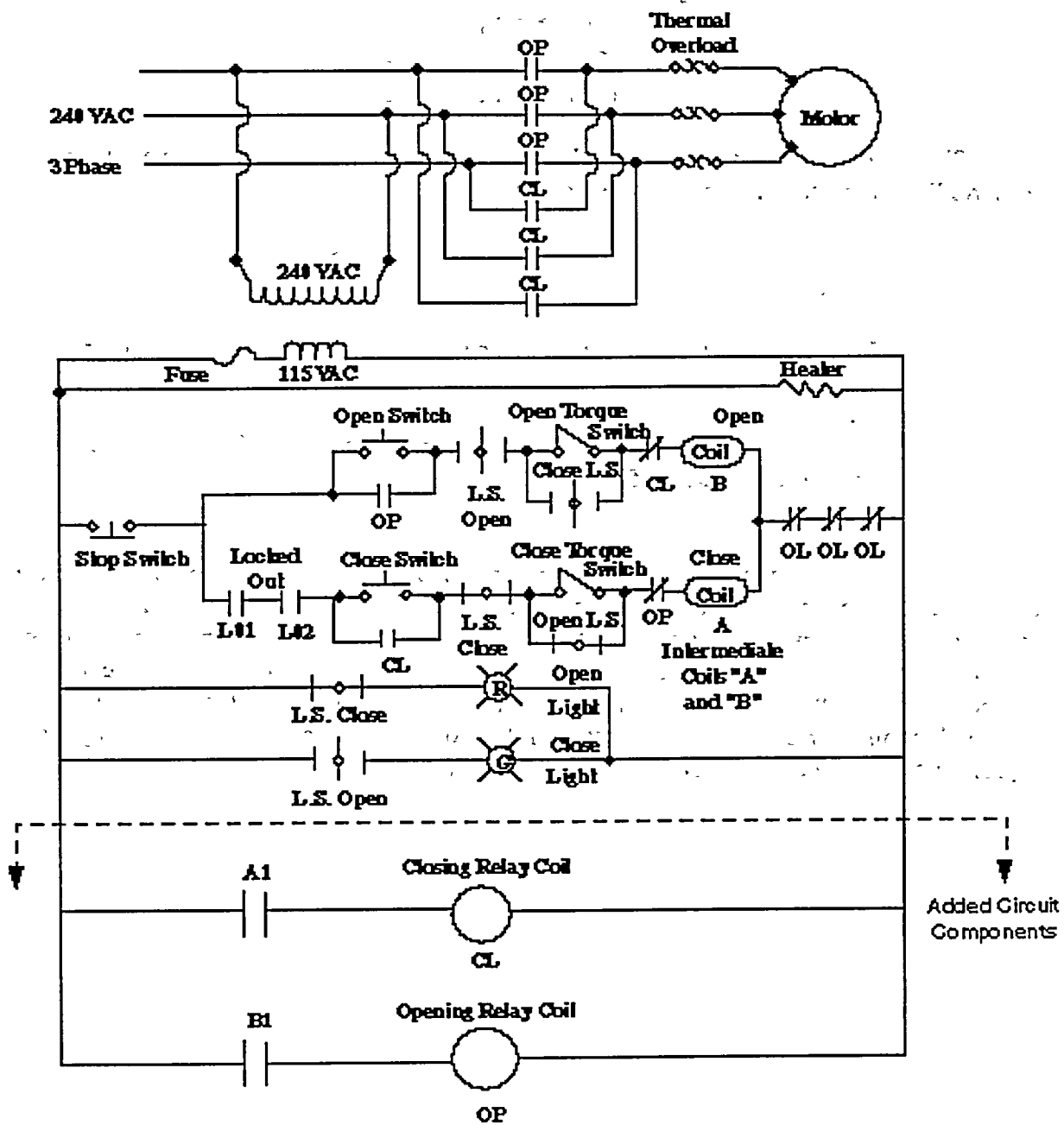


Figure 1. Valve Operating Circuit

**STUDENT MANUAL  
CASE STUDY-1 PART B  
STUDENT MANUAL**

The students will have completed their work in small groups to discuss the information in Scenario Part A and to perform the following:

1. Prioritize and plan their activities for addressing issues and potential problems with ethical and objectivity issues.
2. Identify the basis for addressing each objectivity and ethical issue or potential problem.
3. Make a determination as to whether the inspector failed to meet the objectivity and ethical standards of the NRC.

The following information represents an approach for dealing with all the issues and problems both technical and ethical contained in this case study. This information is presented as an example of the myriad of technical as well as ethical issue an inspector at a plant site will be required to deal with on a routine basis. In this case study the students are to concentrate of the ethical and objectivity issues presented in Part A. The technical issues are presented in this course only for continuity of follow on courses that will be attended by those in a Qualification Program under NRC Manual Chapter (MC) 1245.

**A. REVIEW OF THE ROUGH DRAFT LER ON THE AUXILIARY FEEDWATER TURBINE-DRIVEN PUMP**

**1. Identify issues or potential problems.**

10 Code of Federal Regulations 50.73(b) provides the minimum requirements for the content of Licensee Event reports.

- a. Make an abstract of major occurrences and corrective actions.
- b. A narrative description of what occurred should include:
  - (1) Plant conditions
  - (2) Status of structures, components or systems that were inoperable and contributed to the event
  - (3) Dates and times of occurrences
  - (4) The root cause and contributing factors of each component or system failure or personnel error
  - (5) The failure mode, mechanism, and effect of each failed component, if known
  - (6) Institute of Electrical and Electronic Engineers Standard IEEE STD 803-1983 component function identifier information
  - (7) For failures of components with multiple functions, include information on other systems and functions affected
  - (8) Period of time that a safety system was inoperable
  - (9) Method of discovery of each failure or procedural error
  - (10) Operator errors or procedural deficiencies that contributed to the event
  - (11) Automatically and manually initiated safety system responses
- c. Make an assessment of the safety consequences and implications of the event.

- d. Identify corrective actions planned as a result of the event including prevention of similar future events.
- e. Identify similar events in the past.
- f. Identify personnel to contact for additional information.

This draft LER is deficient in many of the required elements listed above. Six of the Core Inspection Program Procedures covering engineering, operations, and maintenance include the following standard guidance for reviewing LERs:

QUOTE:

When safety issues, events, or problems are reviewed, the adequacy of the results of licensee controls may be assessed by determining how effective the licensee was in performing the following:

- 1. Initial identification of the problem
- 2. Elevation of problems to the proper level of management for resolution (internal communications and procedures)
- 3. Root cause analysis
- 4. Disposition of any operability issues
- 5. Implementation of corrective actions
- 6. Expansion of the scope of corrective actions to include applicable related systems, equipment, procedures, and personnel actions

UNQUOTE:

This draft LER has not been through the expected review process, including the action required by Technical Specification Administrative Controls Section 6.6 Reportable Event Action. The Plant Review Board (PRB) and the Nuclear Operations Board (NOB) are both required to review each reportable event.

Looking at the guidance quoted from inspection procedures for reviewing events, the problem described as overspeed of the turbine and overpressurization of the Auxiliary Feedwater System (AFW) system does not state the entire case for initial identification of the problem. There is also the question of operability, since the Turbine Driven AFW (TDAFW) system can no longer operate under station blackout conditions when service water is lined up to supply the turbine bearing and pump lube oil coolers. (In other words, the pump and turbine are no longer self-cooled during total loss of A.C. electrical power.)

This problem has not yet been elevated to the proper level of management for resolution, although the Plant General Manager gave you the draft LER. The formal review process is probably not yet completed.

The root cause analysis was very shallow. Although the buildup of condensate in the TDAFW supply line has caused turbine overspeed in other plants and perhaps at this plant in the past, the modifications described in the Final Safety Analysis Report (FSAR) should have eliminated this problem if the system was properly lined up and operated.

Until the root cause is determined, inoperability of the TDAFW system has to be addressed. There is no guarantee that the problem will not recur under similar circumstances.

Corrective actions should include an engineering evaluation to determine whether or not the overpressure in the AFW system caused damage beyond the rupture of flow orifice (FO), FO 3123. Was there overpressure relief valve protection that failed to function? Was the valve lineup proper (following the maintenance) to conduct the surveillance test? Should the system be declared inoperable until the engineering evaluation for damage is completed?

2. Identify the regulatory basis for addressing each issue or potential problem.

a. 10 Code of Federal Regulations 50.73, Licensee Event Report System

b. Regional FSAR, Sections 10.4.9, Auxiliary Feedwater System and 15.2.7, Loss of Normal Feedwater Flow

c. 10 Code of Federal Regulations 50, Appendix B, Criterion XVI, Corrective Action

d. Technical Specification 3.7.1.2 Auxiliary Feedwater System, Technical Specification Sections 6.5 Review and Audit and 6.6 Reportable Event Action

3. Determine whether licensee may have violated NRC requirements.

The failure to determine the root cause, evaluate operability, and take proper corrective actions is a violation of NRC requirements.

4. Develop a follow-up action plan to include:

a. Priority of effort

There should be a high priority to return this safety-related system to an operable condition.

b. Reference documents

See paragraph 2 above.

c. Licensee data to review

(1) TDAFW system engineering evaluations following the overpressurization event

(2) Valve lineup for the reference surveillance test following maintenance

(3) Surveillance test procedure

(4) Procedures for drafting and review of LERs

d. Personnel to be interviewed for information:

(1) Plant General Manager

(2) Head of Onsite Engineering

(3) Supervisor for the surveillance test

e. Outside expert assistance

Probably not needed.

f. The inspector should point out to the Plant General Manager that you cannot comment on the content of draft reports such as this LER.

**B. UNESCORTED FORMER EMPLOYEE INSIDE THE PROTECTED AREA**

**1. Identify issues and potential problems.**

a. There has been a breakdown in the security process for releasing former employees since the security badge should have been returned or voided.

b. The licensee action to report this incident needs to be explored.

**2. Identify the regulatory basis for addressing each issue or potential problem.**

a. 10 Code of Federal Regulations 73.55(d)(7)(i)(c)  
Involuntary Termination Badge Revocation.

b. Regional Plant FSAR, Section 13.6, Industrial Security  
(Incorporates by reference Topical Report ABC-1017, "Regional Plant Nuclear Plant Security Plan")

c. Technical Specification Section 6.8.1.d, Security Plan  
implementation

d. 10 Code of Federal Regulations 73, Appendix G Reportable  
Safeguards Events

**3. Determine whether licensee may have violated NRC requirements.**

a. An actual entry of an unauthorized person into a protected  
area is a violation to be reported within one hour of  
discovery, followed by a written report within 30 days.

b. 2.a. above was violated when entry devices were not revoked  
simultaneously with termination for cause.

**4. Develop a follow-up action plan to include:**

a. Priority of effort

There should be a relatively high priority effort to  
determine the breakdown in licensee personnel access requirements and  
implementation of security programs.

b. Reference documents

See paragraph B.2.

c. Licensee data to review

(1) Procedures for security checkout of departing personnel

(2) Records of withdrawal of site access authorization

d. Personnel to be interviewed for information:

(1) Security Manager

e. Outside expert assistance

This incident should be discussed with regional security personnel.

**C. UNBALANCE BETWEEN REACTOR POWER REDUCTION AND TURBINE LOAD REDUCTION**

1. Is the minimum temperature for criticality specified in the Technical Specifications, the FSAR, or both? What are the specific references?

Ans: Technical Specification 3.1.1.5 Minimum Temperature for Criticality specifies the lowest operating loop Tavg of 551°F.

2. What is the basis for this temperature limit and where is it specified?

Ans: The Technical Specification Bases for Limiting Conditions for Operation, Section 3/4.1.1.5, states:

**3/4.1.1.5 MINIMUM TEMPERATURE FOR CRITICALITY**

This specification ensures that the reactor will not be made critical with the RCS average temperature less than 551°F. This limitation is required to ensure: (1) the moderator temperature coefficient is within its analyzed temperature range, (2) the pressurizer is capable of being in an OPERABLE status with a steam bubble, (3) the reactor pressure vessel is above its minimum Nil Ductility Transition (NDT) temperature, and (4) the protective instrumentation is within its normal operating range.

3. What action is required if reactor coolant temperature is below the limit during critical operations? Where is this specified?

Ans: Technical Specification 3.1.1.5 ACTION statement requires Tavg to be restored to greater than 551°F within 5 minutes or be in HOT STANDBY within the next 15 minutes.

4. The inspector should tactfully point out to the Branch Chief that he or she is very busy and the requested information is available in the Technical Specifications copy in the Regional Office. Perhaps this action would preclude similar requests for such information in the future.

**D. RESEARCH ON SAFETY-RELATED, POWER-OPERATED VALVES (See table on next page)**

1. The primary references for this research project are P&IDs.

a. Figure 6.3-5, Engineered Safety Features, Simplified Diagram, Injection Phase, shows the valves that open on receipt of a safety injection signal (SIS).

b. Figure 9.3-14A, Chemical and Volume Control System (CVCS), shows the CVCS gate valves that open on an SIS, MO 112D and MO 112E.

c. Figure 6.3-1B, Safety Injection System, shows the safety injection (SI) valves that open on an SIS, although MO 8803A and MO 8803B are indicated to be open in error on this figure.

These valves are shut when the SIS is received, as indicated in the FSAR.

2. Table 6.3-14 in the FSAR provides additional information on the valves in the CVCS and SI systems that operate on an SIS.

3. Figure 7.2-1, Functional Diagram, Auxiliary Feedwater Pumps Startup, and Figure 10.2-3C, Main Steam System, show the auxiliary feedwater pump supply valves (4) opening on SIS.

4. Figure 1.7-1, Piping Symbols and Drawing Index, provides the symbols for gate valves, both single and double disc. There are no double disc valves indicated in this research project.

5. The inspector should ask the Project Manager to obtain this information from the Licensing Division of the Plant. The licensee is normally amenable to such requests for information.

**SAFETY-RELATED, POWER-OPERATED VALVES REQUIRED TO OPEN ON  
RECEIPT OF A SAFETY INJECTION SIGNAL (SIS)**

1. The following gate valves are required to open on receipt of a safety injection signal:

<u>VALVE #</u>	<u>SYSTEM</u>	<u>FUNCTION</u>
MO 112D	Chemical & Volume Control (CS)	Charging pump Supply valve from RWST
MO 112E	Chemical & Volume Control (CS)	Charging pump Supply valve from RWST
MO 8803A	SI	Charging pump discharge valve to Boron Injection Tank (BIT)
MO 8803B	SI	Charging pump discharge valve to BIT
MO 8801A	SI	Outlet valve, BIT
MO 8801B	SI	Outlet valve, BIT
CV 1451	Main Steam	Auxiliary Feedwater pump supply valve
CV 1452	Main Steam	Auxiliary Feedwater pump supply valve
CV1453	Main Steam	Auxiliary Feedwater pump supply valve
CV1454	Main Steam	Auxiliary Feedwater pump supply valve

<u>VALVE #</u>	<u>SYSTEM</u>	<u>FUNCTION</u>
The following gate valves will open if both SIS and containment spray actuation signals (CSASs) are active		
CS 2053A	Containment Spray	Spray pump 1 & 2 discharge isolation va
CS 2053B	Containment Spray	Spray pump 1 & 2 discharge isolation va
CS 2056 A	Containment Spray	Sodium hydroxide isolation valve
CS 2056B	Containment Spray	Sodium hydroxide isolation valve

**E. PLANT TROUBLE REPORT #1 - STROKE TIME TEST ON MOTOR-OPERATED VALVE MO 112B, SUCTION FROM VOLUME CONTROL TANK (VCT)**

**1. Identify issues and potential problems.**

a. This valve must shut on a safety injection signal to isolate the VCT and shift charging pump suction to the refueling water storage tank. If this valve fails to shut, a second valve MO 112C should function as the backup to meet the single failure criterion through redundancy.

b. The stroke time test should be conducted under normal system operating temperature, flow, and differential pressure where possible. This would require a charging pump to be operating under mode 1 conditions for this test. This may require a special test lineup to prevent pump damage.

c. Since the valve failed an inservice test at the normal interval following the earlier corrective maintenance, additional engineering analysis and testing should have been conducted rather than simply repeating the earlier corrective maintenance. The reference notes on Testing After Maintenance from your experience provide information to help identify underlying causes of failure rather than taking action based on symptoms of the problem; e.g., torque switch adjustment only. The memorandum from the Director, Onsite Engineering, contained in the reference section, also provides good information on analysis of valve inoperability.

**2. Identify the regulatory basis for addressing each issue or potential problem.**

a. 10 Code of Federal Regulations 50, Appendix B, Criterion XVI, Corrective Action

b. Technical Specification 3.5.2, ECCS Subsystems Operability

c. FSAR Table 6.3-7, ECCS System Valve Data

d. 10 Code of Federal Regulations 50, Appendix B, Criterion XI, Test Control

e. 10 Code of Federal Regulations 50.73, Licensee event report system

f. Section XI of the 1983 ASME Boiler and Pressure Vessel Code, Subsection IWV "Inservice Testing of Valves."

g. NRC Generic Letter, GL-89-10 "Safety-related, Motor-operated Valve Testing and Surveillance"

3. Determine whether licensee may have violated NRC requirements.

a. There is a question whether the valve was adequately tested or evaluated to determine the root cause for the failure to stroke properly. This was a violation of Criterion XI and Criterion XVI of 10 Code of Federal Regulations 50, Appendix B.

b. The licensee event report, assuming one was submitted, appears not to have addressed the root cause of this event.

4. Develop a follow-up action plan.

a. Determine factors that could have contributed to the valve failure.

(1) Thermal binding

(2) Stem packing problem

(3) Defective torque or limit switch

(4) Inadequate lubrication

(5) Damaged stem, disc, seat or actuator

b. Depending on the licensee's evaluation of this problem, determine whether maintenance on additional valves should be evaluated including corrective maintenance and post-maintenance testing results.

c. Licensee data to review

(1) Valve maintenance data

(2) Post-maintenance test procedures for valves

(3) LERs on PORV/MOV failures

(4) Engineering analysis of plant trouble reports

d. Personnel to be interviewed for information:

(1) Plant General Manager

(2) Senior maintenance personnel

(3) Director of Onsite Engineering

e. Outside expert assistance. Should be discussed with regional experts.

**F. PLANT TROUBLE REPORT #2 - FAILURE OF PRESSURIZER POWER-OPERATED RELIEF VALVE (PORV) BLOCK VALVES TO CLOSE**

1. Identify issues and potential problems

a. This was a reportable event under 10 Code of Federal Regulations 50.73 caused by failure of safety-related components and the actuation of safety injection. Was a report submitted?

b. An engineering analysis should have been conducted to determine the root cause, since "premature torque switch actuation" is normally only an indication of the problem.

c. What was the cause of: (1) excessive friction between the packing and valve stem and (2) inadequate gearbox lubrication?

There is no indication that an engineering analysis was conducted on what appear to be symptoms of the problem (1) the packing/valve stem friction and (2) inadequate gearbox lubrication.

d. If the valve could not be closed manually using maximum recommended torque, was it prudent or proper to use the motor operator to unseat the valve from the backseat?

e. Why did the motor-operator fail to de-energize when the valve reached the "close position?"

f. Was a 10 Code of Federal Regulations 50.59 analysis required and conducted for substituting a different lubricant and replacing the broken yoke-to-bonnet bolts with higher strength components? What could happen as an adverse result of using higher strength bolts?

g. The PORV blocking valves are required to be full-stroke tested under inservice requirements every 3 months. Was this done during the 8-month period preceding the second failure? If not, why not? If done, what were the results?

2. Identify the regulatory basis for addressing each issue or potential problem.

- a. Technical Specification 3.4.3.2 Relief Valves (PORVs)
- b. FSAR Section 5.4.11 Safety and Relief Valves
- c. 10 Code of Federal Regulations 50, Appendix B, Criterion XI, Test Control
- d. 10 Code of Federal Regulations 50, Appendix B, Criterion XVI, Corrective Action
- e. 10 Code of Federal Regulations 50.59, Changes, tests and experiments
- f. Section XI of the 1983 ASME Boiler and Pressure Vessel Code, Subsection IWV "Inservice Testing of Valves in Nuclear Power Plants"

3. Determine whether licensee may have violated NRC requirements.

- a. Equipment failed which was safety-related (valve gasket in RCP seal injection line, PORV block valve failure to close, failure of yoke-to-bonnet bolts).
- b. It would appear that the root cause was not determined following the first problem with the PORV block valves.
- c. It is not clear that a 50.59 analysis was conducted to justify substituting a different valve stem lubricant and higher strength yoke-to-bonnet bolts.
- d. It appears that surveillance requirement 4.0.5 was not met by full-stroke testing the PORV block valves at least once every 3 months.

4. Develop a follow-up action plan to include:

- a. Priority of effort  

This should have a fairly high priority for determining the operable status of the PORV block valves considering that the root cause for earlier problems was probably not determined.
- b. Reference documents

See paragraph F.2.

c. Licensee data to review:

(1) Engineering analyses of problems with PORV block valves and root cause determinations for LERs submitted on the problems

(2) Licensee oversight review documents completed on these problems including review by the PRB and NOB

(3) Surveillance and inservice testing records

d. Personnel to be interviewed for information

(1) Plant General Manager

(2) Chairman, PRB

(3) Chairman, NOB

(4) Director, Onsite Engineering

(5) Director of Maintenance

e. Outside expert assistance

May be needed to conduct in-depth engineering inspection.

**G. PLANT TROUBLE REPORT #1 PRESSURE LOCKING OF CONTAINMENT SUMP RECIRCULATION GATE VALVES**

1. Identify issues and potential problems

a. Responses to generic letters have been viewed as regulatory commitments in the past, which are not legally binding.

Is the one year delay in conducting an analysis to determine operability under adverse conditions a violation of 10 Code of Federal Regulations 50, Appendix B, Criterion XVI?

b. This appears to be a good vehicle for discussing regulatory commitments versus regulatory requirements.

c. 10 Code of Federal Regulations 50.71(e) states in part that "the updated FSAR shall be revised to include the effects of: ...All

analyses of new safety issues performed by or on behalf of the licensee at Commission request."

It is possible that this analysis includes effects requiring revision of the FSAR.

2. Identify the regulatory basis for addressing each issue or potential problem.

a. 10 Code of Federal Regulations 50, Appendix B, Criterion XVI, Corrective Action

b. 10 Code of Federal Regulations 50.71, Maintenance of records, making of reports

3. Determine whether licensee may have violated NRC requirements.

a. This is a subjective judgement which should include the licensee's history of performance in promptly identifying and correcting problems as required by 10 Code of Federal Regulations 50, Appendix B, Criterion XVI.

b. The engineering analysis verifying operability of the valves should be evaluated for methods used, results, conclusions, supervisory review, and possible need to revise the FSAR.

4. Develop a follow-up plan to include:

a. Priority of effort

This is probably a long-term project, especially if the licensee's program to identify and correct problems is looked at in depth.

b. Reference documents

(1) NRC Inspection Manual, Part 9900, Technical Guidance, "Degraded Conditions" and "Operable/Operability"

(2) 10 Code of Federal Regulations 50, Appendix B, Criterion XVI, Corrective Action

(3) 10 Code of Federal Regulations 50.71, Maintenance of records, making of reports

c. Licensee data to review

(1) Memorandum closing out the action required by the trouble report.

d. Personnel to be interviewed for information

(1) Plant General Manager

(2) Director of Onsite Engineering

(3) Personnel responsible for FSAR update

e. Outside expert assistance

Should be discussed with regional experts.

**H. MODIFICATION OF RHR COLD LEG INJECTION ISOLATION VALVE**  
**MO 8809A**

1. Identify issues and potential problems.

a. The modification introduced single failure points into the valve opening and closing circuitry. This system must be protected against the loss of a safety function due to the single failure of an electrically operated component.

b. The intentional lineup to disable all remote operations of this valve during the five-day maintenance period should have received an engineering evaluation including the ACTION requirements in Technical Specification 4.5.2 ECCS Subsystems.

c. A 10 Code of Federal Regulations 50.59 evaluation was conducted as part of the engineering review of the modification.

The evaluation concluded that the modification did not involve an unreviewed safety question.

2. Identify the regulatory basis for addressing each issue or potential problem.

a. 10 Code of Federal Regulations 50.59 Changes, tests, and experiments

b. 10 Code of Federal Regulations 50, Appendix A, Criteria 34 and 35

c. FSAR Section 6.3.3.13, Single-Failure Capability

d. Technical Specification 4.5.2 ECCS Subsystems

3. Determine whether licensee may have violated NRC requirements.

a. The licensee conducted an inadequate 10 Code of Federal Regulations 50.59 analysis that failed to determine that a single failure point was being introduced into the valve control circuitry.

b. There may be a Technical Specification problem with the 72-hour ACTION statement on ECCS operability.

4. Develop a follow-up action plan to include:

a. Priority of effort

This has a high priority since it involves an unreviewed safety question for an important safety-related component and system.

b. Reference documents

See paragraph H.2.

c. Licensee data to review

(1) Modification design documents

(2) 10 Code of Federal Regulations 50.59 review documents

(3) Record showing training conducted prior to completing this modification

(4) Record showing licensee compensatory measures to be put in place to avoid operational problems from the introduction of a single failure point.

(5) Record of PRB review of this modification

(6) Plant General Manager approval of the modification

d. Personnel to be interviewed for information

(1) Head of Onsite Engineering

(2) Plant General Manager

e. Outside expert assistance

Probably not needed.

**I. POST-MAINTENANCE TESTING OF RHR COLD LEG INJECTION ISOLATION VALVE MO 8809A**

1. Identify issues and potential problems.

a. The licensee should have recognized the requirement to conduct Inservice Test IWV-3200 Valve Replacement, Repair, and Maintenance.

b. The licensee should have included steps in the post-maintenance test procedure similar to those listed in the inspector's personal notes, page number 10-23.

c. The initial closing stroke time exceeds the ASME Section XI requirement, subsection IWV-3417.

This will require a decreased test interval to monthly vice quarterly if not corrected.

d. When the motor-operated valve (MOV) breaker tripped the second time, one or more problems could be indicated:

(1) Torque or limit switch problem

(2) Breaker design or operational problem

(3) Excessive friction between valve stem and packing

(4) See memorandum from Director, Onsite Engineering, for additional potential problems

2. Identify the regulatory basis for addressing each issue or potential problem.

a. ASME Section XI, IWV-3200 Valve Replacement, Repair and Maintenance

b. 10 Code of Federal Regulations 50, Appendix B, Criterion XI, Test Control

c. ASME Section XI, IWV-3417, Valve Operating Time Requirement

d. FSAR Table 6.3-7, ECCS System Valve Data

3. Determine whether licensee may have violated NRC requirements.

a. The post-maintenance test procedure should have included the requirements of Inservice Test IWV-3200 Valve Replacement, Repair, and Maintenance.

b. A case can be made for citing a violation of 10 Code of Federal Regulations 50, Appendix B, Criterion XI, Test Control

c. Depending on the root cause of failure to operate, valve maintenance and testing procedures may be inadequate, and engineering support may be deficient.

4. Develop a follow-up action plan to include:

a. Priority of effort

This has a high priority since operability of a safety-related component and system is degraded.

b. Reference documents

See paragraph I.2.

c. Licensee data to review

(1) Standard licensee post-maintenance test requirements for MOVs

(2) Licensee engineering requirements for reviewing post-maintenance test procedures and results

(3) Previous test results for this valve

d. Personnel to be interviewed for information

(1) Director, Onsite Engineering

(2) Plant General Manager

(3) Maintenance Manager

(4) Head of Mechanical Maintenance

e. Outside expert assistance

Probably not needed.

**J. ASIATIC CLAM FOULING OF THE JACKET COOLING WATER COOLER FOR THE "EAST" ENGINE OF THE "B" TRAIN TANDEM DIESEL GENERATOR**

1. Identify issues and potential problems.

a. With both emergency diesel generators inoperable, the Action Requirements of Technical Specification 3.8.1.1 are entered, which require the following actions to be taken:

"With two of the above required diesel generator sets inoperable, demonstrate the OPERABILITY of two offsite A.C. circuits by performing Technical Specification Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter; restore at least one of the inoperable diesel generator sets to OPERABLE status within 2 hours or be in COLD SHUTDOWN within the next 36 hours. Restore at least two diesel generator sets to OPERABLE status within 72 hours from the time of initial loss or be in COLD SHUTDOWN within the next 36 hours."

b. If Asiatic clam fouling has occurred in one emergency diesel generator, there is a high probability that a problem exists in the other train affecting operability.

c. The licensee should have procedures for minimizing this type of fouling. There may be a problem here. Review of the Licensee response to GL 89-13 "Service Water System Problems Affecting Safety-related Equipment".

d. The 12 KW cooling water system "keep warm" heater is required by the FSAR to ensure that the diesels can be safely brought up to speed and loaded within the design time period. The operability of the system may be degraded.

e. The licensee should have looked hard at the operability of the other tandem engine with the newly-painted fuel racks, and removed the paint on it also.

f. Since the paint problem with the "West" engine of the "A" train involved the fuel racks, the engine should have been retested under load.

2. Identify the regulatory basis for addressing each issue or potential problem.

a. Technical Specification 3.8.1.1.d

b. FSAR Section 8.3.1.1.6, Standby Power Supply System

c. 10 Code of Federal Regulations 50, Appendix B, Criterion V Instructions, Procedures

- d. Technical Specification 6.8 Procedures and Programs & Drawings
- e. 10 Code of Federal Regulations 50, Appendix B, Criterion XI Test Control
- f. Generic Letter (GL) 89-13 "Service Water System Problems Affecting Safety-related Equipment"

3. Determine whether licensee may have violated NRC requirements.

- a. The licensee's procedures for minimizing and monitoring fouling of safety-significant systems appear to be inadequate or are not being properly implemented.
- b. The diesel "keep warm" system is required by FSAR Section 8.3.1.1.6, Standby Power Supply System. The operability of the diesel engine is questionable.
- c. To adequately test the engine after removing the paint from the fuel racks, the engine should have been retested under load considering the requirements of 10 Code of Federal Regulations 50, Appendix B, Criterion XI Test Control.

4. Develop a follow-up action plan to include:

- a. Priority of effort.

This has a high priority since operability of a safety-related component and system is questionable.

- b. Reference documents.

See paragraph J.2.

- c. Licensee data to review

(1) Post-maintenance test requirements for emergency diesel engines

(2) Procedures, schedules, and results for monitoring and minimizing fouling of safety-related systems and components

(3) History of problems caused by Asiatic clam fouling

d. Personnel to be interviewed for information.

(1) Plant General Manager

(2) Maintenance Manager

(3) Engineering personnel responsible for service water and chlorination system operation including Periodic Engineering Tests (PETs) to flush and evaluate system performance.

e. Outside expert assistance is probably not needed.

**K. TRAINING CENTER PICNIC**

1. This is an objectivity and ethical issue involving appearance of inspector impartiality and proper conduct in social activity with the licensee. There is no regulatory basis for this discussion. The issue is one of appearance of impartiality.

a. Should the inspector have attended the picnic?

b. Should the inspector have developed a close personal relationship with someone who works at the Training Center since training is an important aspect of regulatory activity?

c. Is the inspector prepared to be questioned as to his acceptance of money from the Training Center? Is this something that an "intervenor" organization could use to show that the NRC is "in bed with" the licensee?

**L. REACTOR OPERATOR CONSUMING ALCOHOL BEVERAGES**

1. Identify issues and potential problems.

10 Code of Federal Regulations 26, Fitness for Duty Programs, requires that personnel operating the plant will not consume alcohol beverages within 5 hours of assuming operational responsibilities.

2. Identify the regulatory basis for addressing each issue or potential problem.

10 Code of Federal Regulations 26, Fitness for Duty Programs

3. Determine whether licensee may have violated NRC requirements.

a. Fitness for duty is an individual responsibility, and any violation will be cited against the individual.

b. Since this is an "official" licensee function, there may be cause to question licensee officials on the company policy for attending official functions.

4. Develop a follow-up action plan to include:

a. Priority of effort

The inspector should determine whether or not this individual will assume operational responsibilities in violation of Fitness for Duty regulations.

b. Reference documents

10 Code of Federal Regulations 26, Fitness for Duty Programs

c. Licensee data to review

Licensee implementation procedures for Fitness for Duty

d. Personnel to be interviewed for information

(1) Plant General Manager

e. Outside expert assistance

None required.

**M. PLANT TROUBLE REPORT ON EMERGENCY DIESEL GENERATOR**

1. Identify issues and potential problems

a. Non quality assurance approved repair parts were installed in the diesel.

b. The supply requisition for approved parts was canceled.

c. Repairs were completed without quality assurance (QA) involvement.

- d. The diesel generator was not operated following the repairs.
- e. The hoses on the other three emergency diesels were apparently not checked.

2. Identify the regulatory basis for addressing each issue or potential problem.

- a. 10 Code of Federal Regulations 50.59, Changes, tests, and experiments.

- b. 10 Code of Federal Regulations 50, Appendix B

- (1) Criterion VIII, Identification and Control of Materials, Parts, and Components

- (2) Criterion XV, Nonconforming Materials, Parts, or Components

- (3) Criterion XI, Test Control

- c. Technical Specification 6.5.1.6 PRB responsibilities for 10 Code of Federal Regulations 50.59 evaluation oversight

- d. Technical Specification 4.0.5, Surveillance Requirements

- e. Technical Specification 6.8, Procedures and Programs

3. Determine whether the licensee may have violated NRC requirements.

- a. If non quality assurance parts were required but not installed, this would be a violation of the regulatory requirements on quality control.

- b. A 10 Code of Federal Regulations 50.59 evaluation should have been conducted if these repair parts are required to be controlled under the regulatory basis documents.

- c. The licensee may have violated QA implementation procedures if QA involvement was required in this situation.

- d. The diesel should have been tested to ensure operability after the repairs.

4. Develop a follow-up action plan to include:

a. Priority of effort

This should be resolved in a timely manner for an important safety-related system.

b. Reference documents

See paragraph M.2.

c. Licensee data to review

(1) Quality Control requirement documents for emergency diesel generator repair parts

(2) Procurement information on the new hoses

(3) Repair procedure used to install the new hoses

(4) Licensee review and oversight of these repairs

d. Personnel to be interviewed for information

(1) Maintenance Manager

(2) QA Manager

(3) Plant General Manager

e. Outside expert assistance

Probably not needed.

f. This "new information" on the recent history of one of the emergency diesel generators was not intended to be linked to the current diesel problems in this case study, since the engine in question was not identified in the Plant Trouble Report.

## LICENSEE EVENT REPORT (LER)

### FACILITY NAME

Regional Plant

### TITLE

Turbine-Driven Auxiliary Feedwater (TDAFW) Pump Inoperability

### EVENT DATE

06/06/96

### OPERATING MODE

1

### POWER LEVEL

90.0

### ABSTRACT

On June 6, 1996, at 2000 hours with the plant in mode 1 at an average RCS temperature of 586°F, the TDAFW pump oversped during performance of Technical Specification Surveillance Test 4.7.1.2.1.c. This test was being conducted to verify operability of the system on completion of maintenance to replace a pump mechanical seal.

The maximum observed turbine speed was 6200 rpm with a resulting pump discharge pressure of 2100 psig. AFW system design pressure is 2000 psig and normal speed is 4650 rpm. The overpressure condition lasted for approximately 2 minutes and ruptured the downstream flow orifice, FO 3123, on the cooling supply line from the second stage impeller of the pump to the TDAFW bearing and lube oil heat exchangers. The test was stopped by shutting the auxiliary feedwater pump turbine stop valve using the remote control switch at Panel C-05 in the Control Room.

This event is being reported under 10 Code of Federal Regulations 50.73(a)(2)(vii)(B) because a single condition caused one independent train of a safety-related system (required to remove residual heat) to become inoperable.

## BACKGROUND INFORMATION

The Regional Plant Technical Specification 3.7.1.2 requires that two independent trains of AFW be operable in modes 1, 2, and 3.

## EVENT DESCRIPTION

On June 6, 1996 at 2000 hours, the TDAFW pump oversped while being tested for operability following replacement of a pump mechanical seal. The maximum observed turbine speed during the test was 6200 rpm with a resulting pump discharge pressure of 2100 psig. Technical Specification Surveillance Test 4.7.1.2.1.c was being conducted to verify that the pump would develop a discharge pressure of at least 1580 psig at a speed of 4560 rpm on recirculation flow. The system design pressure of 2000 psig was exceeded, which ruptured the casing of flow orifice FO 3123 that regulates the normal cooling water supply to the TDAFW bearing and lube oil heat exchangers. The alternate cooling water supply from the service water system was lined up, and the TDAFW system was declared operable while a replacement flow orifice was being obtained from the vendor.

## CAUSE OF THE EVENT

The cause of the overspeed and overpressurization event was the buildup of condensate in the TDAFW steam supply line, which took place while the system was off-line for maintenance.

## SAFETY ASSESSMENT

The event is reportable under 10 Code of Federal Regulations 50.73(a)(2)(vii)(B) since a single condition caused one independent train of a safety-related system, which is required to remove residual heat to become inoperable.

## CORRECTIVE ACTION

The leaking orifice was removed and blanked off pending receipt of a new orifice. The alternate cooling water supply from the service water system was lined up, and the system was declared to be operable.

## EMERGENCY DIESEL GENERATOR (EDG) SCENARIO DURING THE STARTUP FOLLOWING THE RECENT OUTAGE

During weekend preparations to startup the reactor plant, an auxiliary operator noticed water dripping from one of the diesels in the fuel injector area. One of the small diameter rubber hoses that supply cooling water to the fuel injector pumps was cracked. Upon further investigation, several of the hoses were found to be cracked but not leaking. Since the QA-approved replacement hoses were not available, weekend maintenance workers installed commercial grade hoses with hose clamps and an epoxy sealant.

At the Monday morning licensee meeting, the Plant General Manager announced that plant operational mode change was in progress, and startup would take place the next day. As you left the meeting, you overheard a heated conversation between the Maintenance Supervisor and the QA representative who both attended the meeting.

The QA representative said:

1. Non quality assurance approved repair parts were installed in the diesel.
2. The supply requisition for approved parts was canceled.
3. Repairs were completed without QA involvement.
4. The diesel generator was not operated following the repairs.

The Maintenance Supervisor countered with the argument that the estimated delivery date for the approved parts was 6 weeks, and the new hoses were commercial grade equipment designed for the same pressure and temperature as the original hoses. The diesel generator was not operated because the "keep warm" system provides pressure to these hoses while the EDG is idle, and leaks would be noted, as occurred during the weekend when the EDG was idle.

### CHECKLIST FOR 10 Code of Federal Regulations 50.59 REQUIREMENTS REVIEW

#### I 10 Code of Federal Regulations 50.59 Determination

1. Does the activity require a technical specification change or other Operating License amendment?
2. Does the activity make changes to the facility described in the SAR?
3. Does the activity make changes to procedures as described in the SAR?
4. Does the activity involve tests or experiments not described in the SAR?

II 10 Code of Federal Regulations 50.59 Safety Evaluation To  
Provide the Basis for a Decision on an Unreviewed Safety  
Question

- A. Accidents previously evaluated in the SAR
  1. May the probability of occurrence of an accident previously evaluated in the SAR be increased?
  2. May the consequences of an accident previously evaluated in the SAR be increased?
  3. May the possibility of an accident of a different type than any previously evaluated in the SAR be created?
- B. Malfunction of equipment important to safety
  1. May the probability of occurrence of a malfunction of equipment important to safety previously evaluated in the SAR be increased?
  2. May the consequences of a malfunction of equipment important to safety that was previously evaluated in the SAR be increased?
  3. May the possibility of a different type of malfunction of equipment important to

safety than any that were previously  
evaluated in the SAR be created?

C.

Reduction in margin of safety

Is the margin of safety as defined in the bases of  
any technical specification reduced?

BIBLIOGRAPHY  
CASE STUDY-1

A. **REVIEW OF THE ROUGH EVENT REVIEW TEAM REPORT ON  
THE AUXILIARY FEEDWATER TURBINE-DRIVEN PUMP**

1. 10 Code of Federal Regulations 50.73, Licensee Event Report System
2. Regional Plant FSAR, Sections 10.4.9 Auxiliary Feedwater System and 15.2.7 Loss of Normal Feedwater Flow
3. 10 Code of Federal Regulations 50, Appendix B, Criterion XVI, Corrective Action
4. Technical Specification 3.7.1.2, Auxiliary Feedwater System, Technical Specification Sections 6.5 Review and Audit and 6.6 Reportable Event Action
5. Licensee data to review
  - a. TDAFW system engineering evaluations following the overpressurization event
  - b. Valve lineup for the reference surveillance test following maintenance
  - c. Surveillance test procedure
  - d. Procedures for drafting and review of LERs

**B. UNESCORTED FORMER EMPLOYEE INSIDE THE PROTECTED AREA**

1. Regional Plant FSAR, Section 13.6, Industrial Security (Incorporates by reference Topical Report Regional Gas and Electric (PGE) PGE-1017, "Regional Plant Nuclear Plant Security Plan"
2. Technical Specification Section 6.8.1.d, Security Plan implementation
3. 10 Code of Federal Regulations 73, Appendix G Reportable Safeguards Events
  4. 10 Code of Federal Regulations 73.55(d)(7)(i)(c) Access Requirements
  5. Licensee data to review
    - a. Procedures for security checkout of departing personnel
    - b. Records of withdrawal of site access authorization

**C. UNBALANCE BETWEEN REACTOR POWER REDUCTION AND TURBINE LOAD REDUCTION**

1. Technical Specification 3.1.1.5, Minimum Temperature for Criticality
2. Technical Specification 3/4.1.1.5, Bases for Limiting Conditions for Operation

**D. RESEARCH ON SAFETY-RELATED, POWER-OPERATED VALVES**

1. The references for this research project are in the FSAR.
  - a. Figure 6.3-5, Engineered Safety Features, Simplified Diagram, Injection Phase
  - b. Figure 9.3-14A, Chemical and Volume Control System
  - c. Figure 6.3-1B, Safety Injection System
  - d. Table 6.3-14, Single Active Failure Analysis for ECCS
  - e. Figure 7.2-1, Functional Diagram, Auxiliary Feedwater Pumps Startup, and Figure 10.2-3C, Main Steam System
  - f. Figure 1.7-1, Piping Symbols and Drawing Index

**E. PLANT TROUBLE REPORT #1 - STROKE TIME TEST ON  
MOTOR-OPERATED VALVE MO 112B, SUCTION FROM  
VOLUME CONTROL TANK (VCT)**

1. 10 Code of Federal Regulations 50, Appendix B, Criterion XVI, Corrective Action
2. Technical Specification 3.5.2, ECCS Subsystems Operability
3. FSAR Table 6.3-7, ECCS System Valve Data
4. 10 Code of Federal Regulations 50, Appendix B, Criterion XI, Test Control
5. 10 Code of Federal Regulations 50.73, Licensee event report system
6. Section XI of the 1983 ASME Boiler and Pressure Vessel Code, Subsection IWV "Inservice Testing of Valves"
7. Licensee data to review
  - a. Valve maintenance data
  - b. Post-maintenance test procedures for valves
  - c. LERs on POV/MOV failures
  - d. Engineering analysis of plant trouble reports

**F. PLANT TROUBLE REPORT #2 - FAILURE OF PRESSURIZER  
POWER-OPERATED RELIEF VALVE (PORV) BLOCK VALVES  
TO CLOSE**

1. Technical Specification 3.4.3.2, Relief Valves (PORVs)
2. FSAR Section 5.4.11, Safety and Relief Valves
3. 10 Code of Federal Regulations 50, Appendix B, Criterion XI, Test Control
4. 10 Code of Federal Regulations 50, Appendix B, Criterion XVI, Corrective Action
5. 10 Code of Federal Regulations 50.59, Changes, tests and experiments
6. Section XI of the 1983 ASME Boiler and Pressure Vessel Code, Subsection IWB "Inservice Testing of Valves in Nuclear Power Plants"
7. Licensee data to review
  - a. Engineering analyses of problems with PORVs and root cause determinations for Licensee Event Reports submitted on the PORV problems
  - b. Licensee oversight review documents completed on these problems including review by the Plant Review Board (PRB) and Nuclear Operations Board (NOB)
  - c. Surveillance and inservice testing records

**G. PLANT TROUBLE REPORT #1 PRESSURE LOCKING OF  
CONTAINMENT SUMP RECIRCULATION GATE VALVES**

1. 10 Code of Federal Regulations 50, Appendix B, Criterion XVI, Corrective Action
2. 10 Code of Federal Regulations 50.71, Maintenance of records, making of reports
3. Licensee data to review
  - a. Memorandum closing out the action required by the trouble report

**H. MODIFICATION OF RHR COLD LEG INJECTION ISOLATION VALVE**  
**MO 8809A**

1. 10 Code of Federal Regulations 50.59, Changes, tests, and experiments
2. 10 Code of Federal Regulations 50, Appendix A, Criteria 34 and 35
3. FSAR Section 6.3.3.13, Single-Failure Capability
4. Technical Specification 4.5.2, ECCS Subsystems
5. Licensee data to review
  - a. Modification design documents
  - b. 10 Code of Federal Regulations 50.59 review documents
  - c. Record showing training conducted prior to completing this modification
  - d. Record showing licensee compensatory measures to be put in place to avoid operational problems from the introduction of a single failure point
  - e. Record of Plant Review Board review of this modification
  - f. Plant General Manager approval of the modification

**I. POST-MAINTENANCE TESTING OF RHR COLD LEG INJECTION  
ISOLATION VALVE MO 8809A**

1. ASME Section XI, IWV-3200 Valve Replacement, Repair and Maintenance
2. 10 Code of Federal Regulations 50, Appendix B, Criterion XI, Test Control
3. ASME Section XI, IWV-3417, valve operating time requirement
4. FSAR Table 6.3-7, ECCS System Valve Data
5. Licensee data to review
  - a. Standard licensee post-maintenance test requirements for MOVs
  - b. Licensee engineering requirements for reviewing post-maintenance test procedures and results
  - c. Previous test results for this valve

**J.     ASIATIC CLAM FOULING OF THE JACKET COOLING WATER  
COOLER FOR THE "EAST" ENGINE OF THE "B" TRAIN  
TANDEM DIESEL GENERATOR**

1.     Technical Specification 3.8.1.1.d
2.     FSAR Section 8.3.1.1.6, Standby Power Supply System

**K.    TRAINING CENTER PICNIC**

Regional Guidance on interaction with licensee during social events.

**L.     REACTOR OPERATOR CONSUMING ALCOHOL BEVERAGES**

1.     10 Code of Federal Regulations 26, Fitness for Duty Programs
2.     Licensee data to review
  - a.     Licensee implementation procedures for Fitness for Duty

**M. PLANT TROUBLE REPORT ON EMERGENCY DIESEL GENERATOR**

1. 10 Code of Federal Regulations 50.59, Changes, tests, and experiments
2. 10 Code of Federal Regulations 50, Appendix B
  - a. Criterion VIII, Identification and Control of Materials, Parts, and Components
  - b. Criterion XV, Nonconforming Materials, Parts, or Components
  - c. Criterion XI, Test Control
3. Technical Specification 6.5.1.6, Plant Review Board responsibilities for 10 Code of Federal Regulations 50.59 evaluation oversight
4. Technical Specification 4.0.5, Surveillance Requirements
5. Technical Specification 6.8, Procedures and Programs
6. Licensee data to review
  - a. Quality Control requirement documents for emergency diesel generator repair parts
  - b. Procurement information on the new hoses
  - c. Repair procedure used to install the new hoses
  - d. Licensee review and oversight of these repairs

## **Case Study Number 1**

**CASE STUDY MODULE #1**  
**MASTER PRIORITY LIST (MPL)**

A. High Priority

1. Reactor operator consuming alcohol.
2. Press interest in the NRC Inspector winning the charity prize at the Licensee picnic
3. Unescorted former employee in the Protected Area.
4. Interaction with the Licensee staff on off duty type situations. Riding to and from work with your neighbor who works at the site.
5. The basis for the principles of good regulation and knowing when to say that you are being asked by too many organizations for a piece of your time which in the sum will exceed that which is available is an important issue in this case study

B. Mid Priority

1. Overload of information requested by the Region and the Section Chief for routine information.
2. Research work can take up too much of the Resident Inspector's time for data that the Regional Office should be able to obtain from its own resources.
3. Time management of the Residents work hours and obligations. To many outside time grabbers are taking each a little piece of your time and as a result you are not able to complete your own tasks as a result.

C. Low Priority

1. Research projects on power reduction and power-operated valves for the Regional office and NRR Project Manager.
2. Review of Terminal and Enabling objectives to verify that the important issues that a new inspector should have gleaned from the massive amount of information that is to be evaluated and reviewed on a daily basis by a resident inspector. These are the basis for the case studies and contain the important topical issues that the students should be able to take with them when they complete the seminar.

**Worksheet 1**

**Case Study #1 ETHICAL/OBJECTIVITY FINDING WORKSHEET**

**FINDING:**

**ETHICAL SIGNIFICANCE:**

**REQUIREMENT OR STANDARD:**

**APPARENT CAUSE:**

## **Worksheet 2**

### **HANDLING OF ETHICAL CONCERNS**

- **WHAT ARE OBSERVATIONS/PERCEPTIONS?**

A fact: Any detail noted during an inspection.

- **REQUIREMENT**

A legally binding obligation such as a statute, regulation, license condition, technical specification, safety analysis report, or order. Regional policy that affects the Resident and Resident Inspector's staff. (See Worksheet 3.)

- **ETHICAL SIGNIFICANCE**

The relationship between an ethical requirement or standard and a factual observation.

- **DOCUMENTATION**

Where possible, an observation would be related to a documented requirement or standard.

- **CONCLUSION**

An assessment that relates one or more findings to the broader context of a licensee's programs and performance.

### **Worksheet 3**

#### **REFERENCE DOCUMENTS**

**CODE OF FEDERAL REGULATIONS**

**FINAL SAFETY ANALYSIS REPORT**

**TECHNICAL SPECIFICATIONS**

**OPERATING LICENSE**

**REGULATORY GUIDES**

**AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) BOILER AND  
PRESSURE VESSEL CODE**

**INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)  
STANDARDS**

**AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) STANDARDS**

**REGIONAL INSTRUCTIONS REGARDING INTERACTION WITH THE LICENSEE AND  
LICENSEE STAFF.**

**Notes and or Comments:**

## STUDENT MANUAL

### Expectations Seminar for Inspectors (ESI) CASE STUDY- 2 PART A

You are on your way to work at the nuclear station and a car problem forces you to the side of the road on a relatively isolated section of the two-lane highway. A car stops and you recognize the driver as a junior engineer in the station's nuclear license organization. He offers to take you to the station so you can call to have your car towed.

On the way to the station, the engineer asks if you are attending the picnic tomorrow afternoon hosted by the training and licensing departments at the training center located off-site. You indicated that your neighbor who works at the training center had invited you. The picnic is being held in honor of a person who is retiring after working in both training and operations departments for many years.

After making arrangements to have your car towed for repairs, you decide to follow your schedule and conduct a routine tour of the Central Alarm Station (CAS) and the Secondary Alarm Station (SAS). While viewing the video monitors in the CAS, you notice one monitor that normally covers a long section of the Protected Area Boundary is not working. The guard told you (off the record) that this monitor had been out for several days because a replacement video camera was not available. In his view, the supply system was not responsive to security needs.

On your way back to your office, you wonder whether or not the security guard's information on the unresponsive licensee supply system should be considered as an allegation or if some other approach would be more appropriate.

You check your answering machine and see that there are five messages. The first is from the senior who is still sick. The second is from the branch chief who wants to hold an enforcement conference open to the public with the licensee in 2 weeks that will be used to discuss two recent events including the inadvertent, unmonitored gaseous radioactivity release.

The third call is from a local anti-nuclear activist who wants to know how an inadvertent or unplanned gaseous radioactivity release could go unmonitored. She wants to know how the station determined the amount of radioactivity released in the recent event if the discharge was unmonitored. She also wanted to know the expected increase in radiation exposure from this release for the general population living within the emergency planning zone. Finally, she wanted to know whether the operators responsible for this "criminal act" would be punished.

The fourth call is from your neighbor who said a photographer from the local newspaper will be taking pictures at the picnic tomorrow to write a story about the person retiring and to tie in this person's contribution to the licensee's successful training program.

The last call is from the Operations Manager saying that the turbine-driven auxiliary feedwater system (TDAFW) testing after maintenance is completed on the pump seal should take place between 4:00 to 8:00 p.m. today.

As you finish listening to the last recorded call, you notice a Licensee Event Report (LER) on your desk for a problem with the power operated relief valves (PORVs) that occurred during the refueling outage. (Note: A copy of the LER is at the end of this module.) After reading the report (that you knew was coming), you have several questions which are going to require some research:

1. What went wrong with the maintenance and QA organization to allow this to happen?
2. What post-maintenance verification for operability was conducted when the repairs were completed?
3. Who conducted the root-cause analysis before the LER was submitted? The discussion on the cause of the event is very sketchy.
4. Who reviewed the corrective action for complete, comprehensive response to problems beyond the narrow focus of this event? You reminded yourself that there is an Inspection Plan on Maintenance Observations that might help to look into this event.

You decide to go to the control room to check plant status and review operating logs. The reactor is operating at 100 percent power. The Reactor Operator Log indicated that reactor coolant system (RCS) pressure was reduced from 2250 psig to 2000 psig from 1800 the previous afternoon to 0600 today to seat a leaking pressurizer code safety valve. When you asked the Shift Supervisor about this, he said the leak remained at 5 gallons per minute as determined by an RCS water inventory balance performed under the RCS inventory balance Technical Specification surveillance requirement the after RCS pressure was returned to 2250 psig.

After discussions with Operations Department management, the operators invoked portions of an alarm response procedure to allow them to reduce RCS pressure in an attempt to reseat the leaking code safety valve. That procedure, which had been revised following reactor startup to provide specific guidance for this pressure reduction based on a vendor recommendation, allowed the operators to reduce pressure to as low as 1900 psig to stop the leakage. The vendor recommendation assumed that once the valve resealed at the lower pressure, leakage would not resume when RCS pressure was returned to normal. You made a note to check the design bases documents to verify that there was no violation of regulatory requirements.

While you were talking to the Shift Supervisor, he reminded you that the Technical Specification (TS) surveillance requirement to verify containment spray system operability would be conducted starting in about 30 minutes. You meet with the operator and he starts verifying that each valve (manual, power-operated, or automatic) in the flow path that is not locked, sealed, or otherwise secured in position, is in its correct position.

When he gets to valve CS002 on the inlet to the #2 containment spray pump (P-204B), he finds the valve unlocked with a barely visible safety tag attached to it. The tag states the valve is

to be closed in accordance with an isolation worksheet filled out 35 days ago shortly before the plant was started up following the recent refueling outage. The surveillance checklist requires the valve to be locked open. When the operator checks the valve position, he determines that it is closed, removes the tag, and starts to open the valve as required by the surveillance checklist.

You question him about opening the valve and ask that he find out the status of the isolation requirement to place the tag. He tells you that the tagout was installed just prior to plant startup for 24 hours to isolate a section of containment spray piping for minor repairs, and the tagout was cleared immediately following the work. The operator saw no reason for leaving the valve in the wrong position, and opened the valve after placing the safety tag in his pocket. You check your watch and realize that you have 15 minutes before a scheduled meeting with the Operations Manager to discuss the reduced RCS pressure operations last night, and you need to get your thoughts and questions together.

After the meeting with the Operations Manager, you decide to go back to the control room to see the results of the completed containment spray system (CSS) surveillance. You ask to see the checklist. There are no discrepancies listed, and valve CS002 was noted to be in its correct position on the checklist.

While you are in the control room, you check on the status of the repairs to the discharge relief valve on the positive displacement charging pump and the TDAFW pump mechanical seal that were scheduled to be completed during the day shift today. You note that the repairs are on track for completion in time for you to observe post-maintenance testing before you go home.

You also note in the Control Room logs that the train "A" emergency diesel generator is still inoperable as a result of the sticking fuel rack problem that occurred almost 2 days ago. The 72-hour time limit in the action statement for "One Diesel Generator Inoperable" expires at 8:10 p.m. tomorrow. If this TS is not met a plant shut down to Mode 3 "Hot Standby" is required.

You now wonder if you should have been concerned about having both the TDAFW pump and the train "A" emergency diesel generator inoperable at the same time. The diesel-driven auxiliary feedwater pump is A/C electrical-dependent. On a loss of all power to the 4160V buses, service water is lost for lube oil cooling, engine jacket water cooling, and speed increaser cooling. You intend to look at the technical specifications and the FSAR, since station blackout is a large contributor to the plant's total core damage frequency (CDF) analysis. You also need to refresh your memory on the Surveillance Requirements when an emergency diesel generator is inoperable.

After returning to your office, you complete your homework in preparation for observing post-maintenance verification of operability of the TDAFW system and the positive displacement charging pump. You noted the following thoughts to ensure that the system and components are capable of performing their intended functions:

1. Observing the equipment in operation or reviewing operational data (instrument responding to changes in plant conditions).

2. Observing the tests performed on the equipment, providing they are performed with the system in a normal lineup.
3. Independently verifying the alignment of valves and switches.
4. Verifying that the applicable technical specification surveillance tests are re-performed after the maintenance activity is complete.
5. Testing important attributes of the equipment that may have been affected by the maintenance, and not just those functions and characteristics that are tested by performing the surveillance test required in the technical specifications. Verify that post-maintenance test deficiencies are appropriately evaluated and corrected prior to returning the equipment to service. Post-maintenance testing and TS surveillance testing are usually two distinct activities. If only the TS surveillance is used after maintenance, then a close examination is required to ensure that the attributes of the equipment affected by the maintenance activity have been tested by the TS surveillance.

You look at the post-maintenance test section of the repair procedure for the discharge relief valve that was given to you yesterday. The procedure calls for filling and venting the positive displacement charging pump discharge header, checking for leakage, lining the pump up as the “running” charging pump, and verifying proper operation for a period of at least one hour. There is no mention of a surveillance or inservice test requirement in the procedure.

On your way to observe the post-maintenance testing of the relief valve, you recall that inservice test requirements for pumps and valves are covered by American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, Section XI, a copy of which is in your office.

When you get to the positive displacement charging pump, you see that it is lined up as the “running” pump and is operating with the “B” centrifugal charging pump in standby in a normal operating lineup. Two operators are observing the operational test. You ask the senior test person if there is any requirement to conduct surveillance or inservice testing. He told you the operational test serves the same purpose as the surveillance test in the technical specifications, and an inservice test is not required because the repairs were minor. You intend to look into this when you get back to your office.

When you arrive on scene for the TDAFW testing, you are told by the test supervisor that safety tags have been cleared, valves and switches are aligned for normal operation, and the TDAFW pump has been refilled and vented. There was no leakage from the shaft seal when the pump was refilled.

You are told by the test supervisor that the final test is to run the turbine uncoupled from the pump to check the governor, which was adjusted during the shutdown period. When you question how this tests the operation of the pump, you are told that the pump was observed to turn freely by hand jacking it over, and no leakage was observed. Since the only repairs were to a

mechanical seal, no further pump testing was required by licensee procedures. In addition, the supervisor stated that thermal cycles on steam generator feedwater nozzles is an overriding concern for not fully testing the TDAFW system.

The test supervisor told you that he would check with the Operations Manager before declaring the TDAFW system to be operable. Because this will take some time, you decide to go home for the day. You call your neighbor who works at the training center to see if you can catch a ride home with him as your car is now at the shop and will not be ready for a few days. Your spouse was out of the house entertaining your out of town guests and no one else is at home. The dealer where you had your car towed was not able to supply a rental car while yours is in the shop for repairs. The dealer expects to have a car available for you tomorrow morning. Your neighbor has offered to take you home and drop you off at the car dealer in the morning to pick up your rental car.

You head home and arrive late for dinner with guests. You have two mixed drinks before dinner and two glasses of wine with dinner. The telephone rings while you are enjoying your brandy after dinner. The Plant General Manager tells you that while conducting the TDAFW surveillance to demonstrate that the pump develops the specified discharge pressure on recirculation flow, the turbine oversped and the resultant overpressure cracked the casing of the downstream flow orifice, FO 3123, on the cooling supply line from the second stage impeller of the pump. He also stated his concern that you had insisted this test be conducted. You told him you were merely asking questions to clarify the requirements.

This flow orifice regulates the normal cooling water supply to the TDAFW bearing and lube oil heat exchangers. The alternative cooling water supply from the service water system is now lined up as the backup method, and the TDAFW system has been declared operable while a replacement flow orifice is being obtained from the vendor.

The Plant Review Board (PRB) met and reviewed the safety evaluation required by the Code of Federal Regulations (CFR) 10 CFR 50.59. The Board concluded that the shift to service water cooling did not constitute an unreviewed safety question. You recall that the technical specification action time limit under Auxiliary Feedwater System Operability was due to expire at midnight.

The Plant General Manager said a preliminary root cause analysis had been drafted that attributed the turbine overspeed incident to condensate buildup in the turbine steam supply line, which took place while the system was off-line for maintenance.

After the Plant General Manager hangs up, you recall that the steam supply system had been modified specifically to prevent turbine overspeed from condensate in the steam supply. You now wonder if the licensee was premature in declaring the system operable without further investigation including a root cause analysis. Your guests leave at 11:15 p.m., and you consider whether you should return to the plant to look into this matter before the technical specification time limit expires at midnight.

**STUDENT MANUAL  
CASE STUDY-2 PART B  
STUDENT MANUAL**

The students will have completed their work in small groups to discuss the information in Scenario Part A and to perform the following:

1. Prioritize and plan their activities for addressing issues and potential problems with ethical and objectivity issues.
2. Identify the basis for addressing each objectivity and ethical issue or potential problem.
3. Make a determination as to whether the inspector failed to meet the objectivity and ethical standards of the NRC.

The following information represents an approach for dealing with all the issues and problems both technical and ethical contained in this case study. This information is presented as an example of the myriad of technical as well as ethical issue an inspector at a plant site will be required to deal with on a routine basis. In this case study the students are to concentrate of the ethical and objectivity issues presented in Part A. The technical issues are presented in this course only for continuity of follow on courses that will be attended by those in a Qualification Program under NRC Manual Chapter (MC) 1245.

**A. POWER OPERATED RELIEF VALVE (PORV) PROBLEM**

**1. Identify issues and potential problems.**

- a. The major problem is failure to perform post-maintenance verification that systems, structures, and components are capable of performing their intended function. This can be accomplished by:
  - (1) Observing the equipment (instrument responding to changes in plant conditions)
  - (2) Observing the tests performed on the equipment, providing they are performed with the system in a normal lineup
  - (3) Independently verifying the alignment of valves and switches
  - (4) Verifying that the applicable technical specification surveillance tests are re-performed after the maintenance activity is complete

There is no indication in the LER that post-maintenance verification tests were or were not conducted.

- b. There is a failure to follow up problems effectively in that a very shallow root cause analysis was conducted. The decision to install the main disc guide upside down, in the absence of specific directions, should have been preceded by a review of the technical manual by both maintenance and engineering personnel. The fact the guide could be installed in two ways should have raised questions. The apparent absence of post-maintenance verification of operability indicates a quality assurance (QA) problem in drafting, reviewing, and approving maintenance and post-maintenance testing procedures.
- c. T.S. 3.4.9.3 was violated from the time the head was installed on the reactor vessel with no vent path greater than 3.4 square inches until the problem was discovered and corrected on April 22, 2002.

**2. Identify regulatory basis for addressing issues and potential problems.**

- a. T.S. 3.4.9.3 requires, in part, that two PORVs be operable in Mode 4 when the temperature of any RCS cold leg is less than or equal to 290° F, in Mode 5 and Mode 6 when the head is on the reactor vessel and the RCS is not vented through an opening greater than a 3.4 square inches vent. T.S. 3.4.9.3, Action Statement (c), requires that, with both PORVs inoperable, at least one PORV should be returned to an operable status or that the RCS should be completely depressurized and vented through a minimum 3.4 square inch vent within 8 hours.
- b. 10 CFR Part 50, Appendix B, Criterion XI, requires, in part, that a test

program be established to ensure that all testing required to demonstrate that components will perform satisfactorily inservice is identified and performed in accordance with written test procedures that incorporate the requirements and acceptance limits contained in applicable design documents and that the test program shall include proof tests prior to installation.

- c. 10 CFR 50.55a(f)(4)(ii) requires, in part, that inservice tests to verify operational readiness of valves, whose function is required for safety, conducted during successive 120-month intervals, must comply with requirements of the latest edition and addenda of the ASME Code.
- d. Section XI of the 1983 ASME Boiler and Pressure Vessel Code, article IWV-3000, Test Requirements, Section IWV-3200, Valve Replacement, Repair, and Maintenance, requires, in part, that when a valve or its control system has been replaced or repaired or has undergone maintenance that could affect its performance, and prior to the time it is returned to service, it shall be tested to demonstrate that the performance parameters, which could be affected by the replacement, repair, or maintenance are within acceptable limits.
- e. Regional Plant Second Ten-year Inservice Inspection Interval and Inservice Testing Program for Pumps and Valves states that between February 11, 1988 and February 10, 1998 the Regional Plant ASME Inservice Inspection Program will meet the requirements of the ASME Boiler and Pressure Vessel Code, Section XI, 1983 Edition.
- f. Section XI of the 1983 ASME Boiler and Pressure Vessel Code, article IWV-3000, Test Requirements, Section IWV-3400, Inservice Tests, requires, in part, that Category A valves shall be full-stroke exercised at least once every 3 months. Category A valves that cannot be exercised during plant operation shall be full-stroke exercised during cold shutdowns.

3. Determine whether licensee may have violated license requirements.
  - a. The licensee violated the technical specification requirements stated in paragraph 2.a above during the period 30 March to 22 April when the PORVs were inoperable and the reactor was in one of the conditions specified in T.S. 3.4.9.3.
  - b. After maintenance performed on March 22, 2002 the licensee failed to adequately identify and perform post-maintenance testing of PORVs PCV 455A and PCV 456 to demonstrate that the valves would perform satisfactorily inservice after valve maintenance was performed as previously discussed in paragraphs 2.b, 2.c, and 2.d. Specifically, the post-maintenance test performed did not include a verification that the valve would change position under normal system conditions prior to return to service.
  - c. On March 22, 2002, the licensee failed to adequately full-stroke exercise ASME Category A PORVs PCV 455A and PCV 456. Specifically, operational surveillance testing, performed on the above date to satisfy ASME Section XI full-stroke exercise requirements, using local valve testing procedures, did not include an adequate test to detect that the main disc guides in valves PCV 455A and PCV 456 were misoriented causing the valves to fail to stroke open.
4. Develop a follow-up action plan to include:
  - a. Priority of effort

This has a high priority since it indicates a major problem in QA, quality oversight, and post-maintenance testing.
  - b. Reference documents
    - (1) Regional Plant T.S. 3.4.9.3
    - (2) Regional Plant FSAR, Section 5.4.11, "Safety and relief valves"
    - (3) 10 CFR 50, Appendix B, Criterion XI
    - (4) 10 CFR 50.55a(f)(4)(ii)
    - (5) Section XI of the 1983 ASME Boiler and Pressure Vessel Code, articles IWV - 3000, "Test Requirements," IWV-3200, "Valve Replacement, Repair, and Maintenance," IWV-3400, "Inservice Tests".
    - (6) Regional Plant maintenance and testing procedures for PORVs

- c. Licensee data to review
  - (1) Post-maintenance and inservice testing results
  - (2) LER review by Nuclear Plant Review Board (PRB)
- d. Personnel to be interviewed for information
  - (1) Operations Manager
  - (2) Maintenance Manager
  - (3) Chairman, Nuclear PRB
  - (4) Supervisor for post-maintenance and inservice testing of PORVs following maintenance completed on March 22, 2002
  - (5) Planning/Work Control
- e. Outside expert assistance

Depending on initial review of information on the QA program, the region may want to call in a team inspection.

**B. RCS PRESSURE REDUCTION TO SEAT PRESSURIZER CODE SAFETY VALVE**

**1. Identify issues and potential problems.**

- a. The reduction in normal RCS pressure below 2250 psig, based solely on a vendor's approval, should have raised questions by operations and engineering personnel since the combination of thermal power, pressurizer pressure, and the highest operating loop coolant average temperature (Tavg) shall not exceed the limits shown in T.S. 2.1.1, Figure 2.1-1.
- b. A review of Figure 2.1-1 would indicate that a reduction in Tavg was not required to avoid exceeding a reactor core safety limit. There is no indication in the technical specifications that reduced RCS pressure was precluded by the requirements in this figure or by any other T.S. requirements.
- c. T.S. Section 2.0, Safety Limits and Limiting Safety System Settings, provides no insight because the focus is on the allowed combination of thermal power, RCS pressure, and average temperature for which the calculated Departure From Nucleate Boiling (DNBR) is no less than the design DNBR value, and the average enthalpy at the vessel exit is less than the enthalpy of saturated liquid.
- d. The revised procedure was inadequate because it permitted the operation of the reactor at a pressure below 2220 psig which was not in accordance with the FSAR Table 4.4-1 and Section 15.0.3.2 "Initial Conditions" which states:

"For accident evaluation, the analyses account for uncertainties about the rated values. The following variations are considered:

- |     |                         |  |
|-----|-------------------------|--|
| (1) | Core power              | ± 2 percent allowance for calorimetric error                           |
| (2) | Average RCS temperature | ± 4° F allowance for dead-band and measurement error                   |
| (3) | Pressurizer pressure    | ± 30 psi allowance for steady-state fluctuations and measurement error |

Initial values for core power, average RCS temperature, and pressurizer pressure are selected to minimize the initial departure from nucleate boiling ratio (DNBR) unless otherwise stated in the sections describing specific accidents."

- e. The reactor was placed in a condition outside the accident analysis and design basis. Prior to reducing the RCS pressure, neither management nor staff ensured that a safety evaluation was performed, as required by 10 CFR 50.59, to provide a basis that the change from the FSAR and the reduced pressure test did not involve an unreviewed safety question.
- f. T.S. 6.5.1.6 and 6.5.2.7 state the following QA oversight responsibilities to advise the Plant General Manager on all matters related to nuclear safety:

6.5.1.6 The PRB shall be responsible for:

(1) Review of the safety evaluations for: (1) procedures; (2) change to procedures, equipment, systems, or facilities; and (3) tests or experiments completed under the provision of 10 CFR 50.59 to verify that such actions did not constitute an unreviewed safety question.

(2) Review of proposed procedures and changes to procedures, equipment, systems, or facilities that may involve an unreviewed safety question as defined in 10 CFR 50.59 or involves a change in technical specifications.

(3) Review of proposed tests or experiments that may involve an unreviewed safety question as defined in 10 CFR 50.59 or requires a change in technical specifications.

(4) Review of proposed changes to technical specifications or the Operating Licensee.

(5) (Additional responsibilities unrelated to this problem are not repeated here.)

The Nuclear Operations Board (NOB) is responsible for essentially the same requirements and for advising the Plant General Manager on action to be taken.

There was no evidence that either of these review and audit boards considered the procedural change as required by T.S. 6.5.1.6 and 6.5.2.7 and 10 CFR 50.59. Before authorizing the reduction of pressure, senior management should have recognized that an evaluation was required to ensure that the change did not involve an unreviewed safety question.

- g. The 5 gpm safety valve leakage could be a technical specification problem.

2. Identify regulatory bases for addressing issues or potential problems
  - a. 10 CFR 50.59
  - b. 10 CFR Appendix B
  - c. Regional Plant FSAR Table 4.4-1 and related discussion on initial conditions for safety evaluations
  - d. Regional Plant FSAR 15.0.3.2 on initial conditions for safety evaluations
  - e. Regional Plant T.S. 2.1.1 and Figure 2.1-1
  - f. Regional Plant technical specifications on QA oversight responsibilities, 6.5.1.6 and 6.5.2.7.
  - g. Technical specification on RCS leakage, T.S. 3.4.6.2.
3. Determine whether licensee may have violated Regional Plant operating license requirements

See paragraphs 1.e, and 1.f.

4. Develop a follow-up action plan to include:
  - a. Priority of effort

This is a high priority action because of the apparent breakdown in QA oversight of 10 CFR 50.59 requirements
  - b. Reference documents

See paragraph 2
  - c. Licensee data to review
    - (1) Documentation of QA oversight history, in particular for the responsibilities listed in paragraph 1.f for the PRB and the NOB.
    - (2) The documentation of review of 10 CFR 50.59 requirements by operations and engineering personnel needs to be inspected thoroughly.
    - (3) The licensee's procedures for reviewing vendor recommendations needs to be reviewed.

- (4) Operator and engineering training on 10 CFR 50.59 requirements needs to be reviewed.
- (5) Reactor operator logs for the period of reduced pressure operations
- (6) Procedure review and approval procedures
- d. Personnel to be interviewed for information
  - (1) Operations Management
  - (2) Engineering Management
  - (3) The Plant General Manager
  - (4) Personnel responsible for change control procedure implementation
  - (5) The senior member of the PRB
  - (6) The senior member of the NOB
  - (7) Shift operations personnel on duty during the period of reduced RCS pressure
- e. Outside expert assistance

Senior management staff, the operations staff, and the engineering staff should have demonstrated a technically inquisitive attitude and aggressively questioned the appropriateness of this evolution before authorizing it to take place.

The serious nature of this problem and management involvement would suggest the need for a special inspection team, such as an Augmented Inspection Team (AIT). This decision is beyond your control.

**C. TAGOUT/LOCKOUT/SYSTEM RESTORATION PROBLEM WITH CONTAINMENT SPRAY VALVE CS002**

1. Identify issues and potential problems.
  - a. The containment spray system (CSS) ensures that containment depressurization and cooling will be available for the design basis loss of coolant accident. With valve CS002 closed, CSS train "B" is inoperable and has been that way for 35 days.
  - b. There has been a major violation of tagout/lockout/system restoration requirements.
  - c. The operator in this case appears to lack training or discipline in tagout/lockout/system restoration procedures as evidenced by his willingness to simply remove a safety tag, reposition a valve, and sign off the surveillance with no recorded discrepancies. This appears to be a situation involving falsification of records.
2. Identify regulatory basis for addressing issues and potential problems.
  - a. T.S. 3.6.2.1, operability of spray systems; associated surveillance 4.6.2.1; T.S.6.8, Procedures and Programs
  - b. FSAR, Section 6.2, Containment Systems; 6.3, ECCS; 6.5, Fission Product Removal and Control System
  - c. 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings"
  - d. 10 CFR 50.9, Completeness and accuracy of information
3. Determine whether licensee may have violated Regional Plant operating license requirements.
  - a. The licensee violated the technical specification requirements stated in paragraph 2.a above under plant modes 1, 2, 3, and 4 during the 35-day period in question. Only one independent CSS was operable during this time period.
  - b. The licensee violated internal procedures that incorporate the requirements of 10 CFR 50, Appendix B, Criterion V, "Instructions, Procedures, and Drawings." "Activities affecting quality shall be prescribed by documented instructions, procedures or drawings of a type appropriate to the circumstances and shall be accomplished in accordance with these instructions, procedures, or drawings."

In this case, a Valve Lineup Checklist required operators to walk down the system and place valves in the proper position. An independent verification of valve position was required. When the Prestart Valve Checklist from the recent startup was reviewed, it documented that valve CS002 was locked open, when in fact, it was unlocked closed, and no discrepancies were noted in the "comments" section of the checklist.

In addition, equipment isolation procedures require an independent verification of valve position to be performed and documented if safety tags are to be permanently cleared and valves are to be returned to operating status and locked.

In this case, for the CSS maintenance performed shortly before plant startup, the Shift Supervisor did not direct an independent verification following a permanent clear of safety tags required by the isolation procedure.

- c. The failure to record the discrepancy in valve position of CS002 appears to be a serious violation of 10 CFR 50.9.

4. Develop a follow-up action plan to include:

- a. Priority of effort

This problem has a high priority because of the significance of the technical specification violation, the failure to follow procedures that incorporate regulatory requirements, and the possible falsification of records.

- b. Reference documents

(1) T.S. 3.6.2.1 and Surveillance 4.6.2.1

(2) T.S. 6.8

(3) FSAR Sections 6.2, 6.3, and 6.5

(4) 10 CFR 50, Appendix B, Criterion V

(5) NRC Information Notice 92-30: Falsification of Plant Records

- c. Licensee data to review

(1) Reactor plant Prestart Valve Checklist for the last startup

(2) Equipment isolation worksheet including valve lineup checklist for the maintenance performed on the CSS

(3) Training records for the operator who conducted the surveillance valve lineup check

(4) Valve lineup training records for operators including lockout, tagout, position checking, repositioning and system restoration following maintenance

(5) Licensee history of previous valve lineup violations

d. Personnel to be interviewed for information

(1) Operations Manager

(2) Shift Manager who reviewed and approved the Prestart Valve Checklist and the permanent clearing of safety tags following CSS maintenance

e. Outside expert assistance

Outside assistance may be required to thoroughly inspect in the areas of training and procedural compliance. The Office of Investigations must be involved in falsification of records.

#### Summary:

A check of the records in this case would show that a combination of inattention to detail and weakness in procedural compliance resulted in a Prestart Valve Checklist documenting that CS002 was locked open when it was actually unlocked closed. This error occurred even though operators had completed a walkdown of the system including independent verification of valve position.

The Shift Manager subsequently exhibited a lack of questioning attitude when confronted with conflicting information between the Prestart Valve Checklist and the Valve Isolation Worksheet for CSS repairs. As a result, he cleared the safety tags associated with the repairs without directing an independent verification of valve position in accordance with procedural requirements. Excessive operations workload at the end of the refueling outage may have contributed to this error.

If falsification of records occurred, the Office of Investigations must be immediately notified.

**D. TURBINE-DRIVEN AFW PUMP (TDAFWP) OVERSPEED AND OVERPRESSURIZATION WHILE CONDUCTING T.S. SURVEILLANCE**  
**4.7.1.2.1.C**

1. Identify issues and potential problems
  - a. Turbine-driven AFW is an important Engineered Safety System for the design basis loss of coolant accident and for concurrent loss of onsite and offsite AC electric power (station blackout). AFW turbine overspeed and resultant AFW system overpressurization has been a common problem caused by governor failure and from condensate in the turbine steam supply.
  - b. The TDAFW system is designed to be operable under station blackout conditions. The decision to lineup service water to supply TDAFW bearing and lube oil heat exchangers defeats this design feature.
  - c. The steam supply to the AFW turbine is designed to prevent the accumulation of condensate, which can cause turbine overspeed. Something must be wrong with the lineup, system design, system operation, or procedures.
  - d. There is no indication that the affected piping and components were inspected for evidence of rupture, or that an engineering analysis was performed to justify continued operation.
  - e. The Plant General Manager has alleged that you coerced plant personnel into conducting a test that damaged a vital safety system, when their own approved procedures did not require such a test.
2. Identify regulatory basis for addressing issues or potential problems
  - a. T.S. 3.7.1.2
  - b. FSAR Section 10.4.9, pages 10.4-50 and 10.4-55 and Table 10.4-19, Sheet 2
  - c. AFW System Description, 02-A-12-SD, pages 8 and 11
  - d. FSAR Section 15.2.7
  - e. 10 CFR 50.63
  - f. Piping and Instrumentation Diagrams (P&IDs) 10.4-2B, 10.4-3A, 9.2-1A, 10.2-3C

- g. Operating Instruction OI-8-2, Auxiliary Feedwater
- h. 10 CFR 50, Appendix B, Criterion XVI Corrective Action

3. Determine if licensing requirements have been violated

- a. The alignment of service water to TDAFW bearing and lube oil heat exchangers means that the system is no longer capable of performing its safety-related functions under station blackout conditions as specified in the FSAR, Section 10.4.9.2.3.2 "Emergency Operation."

"The turbine-driven pump is capable of operating and supplying feedwater to the steam generators for at least 2 hours should a loss of all noninverter-backed ac power occur. Cooling water to the lube oil and bearing coolers is supplied from the pump recirculation line." (EMPHASIS ADDED)

FSAR Table 10.4-19 also discusses these safety-related functions.

- b. There is a separate problem of inconsistency between the FSAR and other documentation. The supporting P&ID, 10.4-2B, "Condensate and Feedwater System," shows the normally aligned cooling water supply coming from the discharge of the second stage impeller of the TDAFW pump, with the supply from the pump recirculation line as backup. (EMPHASIS ADDED)

The Auxiliary Feedwater System Description, 02-A-12-SD, page 8, states: "The normal source of cooling is provided by a 3/4 inch pipe tapping off the pump casing at the second stage impeller with the flow returning to the TDAFW suction. (EMPHASIS ADDED) The backup supply, which is normally isolated, is supplied from the TDAFW recirc line just downstream of the flow restrictor and also returns to the TDAFW suction. Flow from these supplies is approximately 15 gpm. Service Water System (SWS) is also normally isolated but can be aligned to provide cooling with return flow realigned to go to the Dilution and Discharge Structure (D&DS). If the SWS is aligned, the TDAFW is no longer AC independent as it relies on the operation of the SWS."

These inconsistencies as to the "normal" cooling water supply lineup are not violations, but should be corrected.

- c. With respect to operability, the technical specification definition is stated here:

OPERABLE-OPERABILITY

1.20 A system, subsystem, train, component or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified safety-related function(s). Implicit in this definition shall be the assumption that all necessary attendant instrumentation, controls, normal and emergency electrical power sources, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its safety-related function(s) are also capable of performing their related support function(s).

It is clear from this definition that the TDAFW system is inoperable when bearing and lube oil cooling is supplied by the service water system. The licensee is operating in violation of T.S. 3.7.1.2, which requires two auxiliary feedwater pumps to be operable.

- d. The licensee has been technically in violation of the FSAR since the "normal" cooling water supply is not the pump recirculation line as stated on page 10.4-55 of the FSAR.

4. Develop a follow-up action plan to include:

- a. Priority of effort

(1) The licensee should be notified immediately of the technical specification violation and the action required to shift the cooling water supply to the pump recirculation line.

(2) The licensee should immediately verify the integrity of the TDAFW system after the overpressurization incident.

(3) The licensee should determine what caused the turbine to overspeed before declaring the system to be operable.

- b. Reference documents

See paragraph D.2

c. Licensee data to review

- (1) TDAFW operating instructions and procedures
- (2) Post-maintenance testing results for the recent TDAFW pump repairs
- (3) Documentation of 10 CFR 50.59 determination of applicability and required safety analysis for an Unreviewed Safety Question
- (4) Records of management oversight evaluations required by T.S. 6.5 "Review and Audit" by the PRB and the NOB

d. Personnel to be interviewed for information

- (1) Operators who conducted surveillance 4.7.1.2.1.c
- (2) Shift Supervisor during surveillance 4.7.1.2.1.c
- (3) Operations Manager
- (4) Head of On-site Engineering
- (5) Chairman of the PRB
- (6) Plant General Manager

e. Outside expert assistance

Probably not needed

**E. SECURITY VIOLATION**

1. Identify issues and potential problems
  - a. Section of the protected area boundary is unmonitored, which could allow unauthorized or undetected access
  - b. Unavailability of replacement video camera
  - c. Allegation that the supply system was not responsive to quickly return security monitor to operation
2. Identify regulatory basis for addressing issues or potential problems
  - a. 10 CFR 73.45, Performance Capabilities for Fixed Site Physical Protection Systems
  - b. Appendix G to Part 73 - Reportable Safeguards Events
  - c. 10 CFR 50.72 and 50.73 Notification Requirements
  - d. Regional Plant FSAR, Section 13.6, Industrial Security  
  
(Incorporates by reference Topical Report RGE-1017, "Regional Plant Nuclear Plant Security Plan")
  - e. Regional Plant T.S. 6.8.1.d, Security Plan Implementation
3. Determine whether licensee may have violated NRC requirements
  - a. The inspector should determine if one or more armed guards with communications are posted with a clear line of view of the affected Protected Area boundary.
  - b. Determine if required reports have been made in accordance with 10 CFR 73, Appendix G, "Reportable Safeguards Events," 10 CFR 50.72 and 10 CFR 50.73 as implemented in the station security plan.
  - c. Look into the allegation that the supply system was not responsive.

4. Develop a follow-up action plan to include:
  - a. Priority of effort
    - (1) Situation appears to be easily resolved by stationing required armed guards.
    - (2) Looking into supply system support does not require immediate action.
  - b. Reference documents
    - As listed in paragraph 2 of the follow-up action plan
  - c. Licensee data to review
    - (1) Record showing out-of-service period for monitor
    - (2) Record showing compensatory measures, if any, put in place
    - (3) Record of efforts to restore the monitor to operation including actions taken to obtain repair parts
    - (4) Oversight involvement including PRB and Security Manager
  - d. Personnel to be interviewed for information
    - (1) Security Manager
    - (2) Chairman, PRB
  - e. Outside expert assistance
    - Probably not needed

**F. UNMONITORED GASEOUS RADIOACTIVITY RELEASE**

**1. Identify issues and potential problems**

- a. The question by the anti-nuclear activist who wants to know “how an inadvertent or unplanned gaseous radioactivity release could go unmonitored” should have prompted a review of relevant P&IDs, the technical specifications, and the FSAR, if not completed earlier. The waste gas collection header exhausts through gas activity monitor PRM-4A, which provides an alarm and automatic termination of releases from the waste gas holdup system during normal operations.

In this gaseous release, although the automatic termination feature was bypassed by the waste gas compressor relief path, the alarm should have been operable. There was no information that an alarm occurred, which would indicate that the monitor was inoperable.

- b. If the gas activity monitor, PRM-4A, was inoperable, an additional violation of T.S. 3.3.3.10 on instrumentation requirements occurred.

**2. Identify regulatory basis for addressing issues or potential problems**

- a. T.S. 3.3.3.10 and Table 3.3-13
- b. FSAR Section 11.3, “Gaseous Waste Management Systems”
- c. FSAR Section 11.5, “Process and Effluent Radiological Monitoring Systems”
- d. P&ID 11.3-4, Radioactive Gaseous Waste System
- e. 10 CFR 50, Appendix B, Criterion XVI, Corrective Action

**3. Determine whether licensee may have violated regulatory requirements**

- a. T.S. 3.3.3.10 as amplified by Table 3.3-13 requires continuous effluent monitoring, which was apparently not available. FSAR Sections 11.3 and 11.5 also require continuous monitoring.
- b. 10 CFR 50, Appendix B, Criterion XVI, requires prompt identification and correction of conditions adverse to quality. In this case, a deficiency in monitoring radioactive gaseous releases was not identified or corrected in a timely manner.

4. Develop a follow-up action plan to include:

a. Priority of effort

Inoperability of a gaseous radioactive waste monitoring system measuring release to the environment is a significant problem and should have a high priority for correction.

b. Reference documents

See paragraph 2

c. Licensee data to review

(1) Results of surveillances conducted under Technical Specifications Table 4.3-9 "Radioactive Gaseous Process and Effluent Monitoring Instrumentation Surveillance Requirements".

(2) Maintenance history records for gas activity monitor, PRM-4A

(3) Survey data, logs, and recorder strips

d. Personnel to be interviewed for information

(1) Operations Manager

(2) Shift Supervisor

(3) Surveillance Records Coordinator

e. Outside expert assistance

Not required.

**G. SECURITY GUARD ALLEGATION THAT SUPPLY SYSTEM IS NOT RESPONSIVE**

**1. Identify issues and potential problems.**

- a. There is no such thing as an “off-the-record” exchange of information between a licensee employee and a resident inspector. The security guard should have been told that you would follow-up on his “information.” It does not seem necessary at this point to refer to his statement as an allegation as defined in NRC guidance and policy. It is important to ask follow-up questions and get as much information as possible.
- b. This alleged unresponsiveness can be easily verified by checking the record of licensee actions taken following the report that the video monitor camera was inoperable. This can be done without revealing the identity of the security guard; your actions could be viewed as logical follow-up to your initial observation.

Your inspection report on the problem could then be based on direct observation, and the identify of the initial source of the information would be protected.

- c. If this information was treated as a formal allegation, then the detailed procedures in the NRC Allegation Management Program would apply.

**2. Identify regulatory basis for addressing issues or potential problems.**

There may be a regulatory basis in the licensee’s T.S. Section 6.0, “Administrative Controls” if the licensee is not following his own procedures, in this case repair or replacement parts procurement. Section 6.8, “Procedures and Programs” incorporates by reference “The applicable procedures recommended in Appendix A of Regulatory Guide 1.33, November, 1972.”

**3. Determine if licensing requirements have been violated.**

- a. T.S. Section 6.0 prescribes administrative controls for overall facility operation.
- b. T.S. Section 6.8 requires that written procedures shall be established, implemented, and maintained covering various aspects of facility operation with reference to the applicable procedures in Appendix A of Regulatory Guide 1.33, November, 1972.

If licensee personnel are not following their own procedures required by technical specifications, they could be in violation of licensing requirements.

4. Develop a follow-up action plan to include:

a. Priority of effort

Since this is not a safety issue, the priority would be low.

b. Reference documents

(1) T.S. Section 6.0 and Section 6.8

(2) Appendix A of Regulatory Guide 1.33, November, 1972

c. Licensee data to review

(1) Licensee supply procurement procedures

(2) Deficiency report on the video monitor inoperability

(3) Status of replacement video camera, follow-up action, management involvement

d. Personnel to be interviewed for information

(1) Security Manager

(2) Supply Department Manager

e. Outside expert assistance

If this is being handled outside the Allegation Management Program, outside expert assistance is probably not needed. Otherwise, the Regional Plant Senior Allegation Coordinator must be informed.

**H. CONCURRENT INOPERABILITY OF THE TDAFW PUMP AND THE “A” EMERGENCY DIESEL GENERATOR**

1. Identify issues and potential problems
  - a. When an emergency diesel generator is inoperable, conduct of T.S. surveillance requirements should be verified for the period in question.
  - b. Having both the TDAFW pump and an emergency diesel generator out of service is a potential problem and a major contributor to the plant's total core damage frequency in the event a station blackout occurs. Voluntary entry into this condition is considered to be imprudent.
2. Identify regulatory basis for addressing issues or potential problems
  - a. T.S. 3.8.1.1 action requirements b. states “with either an offsite circuit or diesel generator set... inoperable, demonstrate the OPERABILITY of the remaining A.C. sources by performing Surveillance Requirement 4.8.1.1.1.a within one hour and at least once per 8 hours thereafter, and Surveillance Requirement 4.8.1.1.2.a.5 within 24 hours.
  - b. T.S. 3.7.1.2 action requirement a. states “with one of the above auxiliary feedwater pumps (TDAFW or diesel-operated feedwater pump) inoperable, restore the inoperable pump to OPERABLE status within 72 hours or be in HOT SHUTDOWN within the next 12 hours.”
  - c. As discussed earlier in section D of this scenario, there is a question about the operability of the TDAFW pump as described in the FSAR.
3. Determine if licensing requirements have been violated
  - a. Having both the TDAFW pump and one emergency diesel generator out of service is not prohibited by the technical specifications or the FSAR, but doing this voluntarily is imprudent.
  - b. A question should be raised as to how long the TDAFW pump has been out-of-service, since the 72 hour ACTION requirement was exceeded after midnight, if the TDAFW pump was not returned to OPERABLE status as defined in the FSAR.

4. Develop a follow-up action plan to include:

a. Priority of effort

Since this is an important safety issue, it should be handled as a high priority item for resolution.

b. Reference documents

See paragraph 2

c. Licensee data to review

(1) Documentation of 10 CFR 50.59 applicability determination and required safety analysis for an Unreviewed Safety Question for the TDAFW system.

(2) Records of management oversight evaluations required in T.S. 6.5 "Review and Audit" by the PRB (onsite) and the NOB (offsite) with respect to the operability status and safety analysis for the TDAFW system.

d. Personnel to be interviewed for information

(1) Chairman of the PRB

(2) Plant General Manager

e. Outside expert assistance

Because of the serious nature of these problems indicating failure of safety management review and audit, outside assistance by a team of inspectors is probably warranted.

**I. POST-MAINTENANCE TESTING OF THE POSITIVE DISPLACEMENT CHARGING PUMP RELIEF VALVE**

1. Identify issues and potential problems
  - a. The major problem is failure to perform post-maintenance verification that systems, structures, and components are capable of performing their intended function. In this case, the relief valve was not verified to operate at its setpoint to protect the charging system from overpressurization.
  - b. There is a related problem of failure to provide and implement a procedure covering testing of safety-related equipment.
  - c. The testing procedure subjected the charging system to potential hazard of overpressurization.
  - d. The charging pump is inoperable without the relief valve.
2. Identify regulatory basis for addressing issues and potential problems
  - a. 10 CFR Part 50, Appendix B, Criterion XI, requires, in part, that a test program be established to ensure that all testing required to demonstrate that components will perform satisfactorily in service is identified and performed in accordance with written test procedures that incorporate the requirements and acceptance limits contained in applicable design documents and that the test program shall include proof tests prior to installation.
  - b. Section XI of the 1983 ASME Boiler and Pressure Vessel Code, article IWV-3000, Test Requirements, Section IWV-3200, Valve Replacement, Repair, and Maintenance, requires, in part, that when a valve or its control system has been replaced or repaired or has undergone maintenance that could affect its performance, and prior to the time it is returned to service, it shall be tested to demonstrate that the performance parameters, which could be affected by the replacement, repair, or maintenance are within acceptable limits.
  - c. Section XI of the 1983 ASME Boiler and Pressure Vessel Code article IWV-3512 "Test Procedure" requires bench testing of setpoints with suitable hydraulic or pneumatic equipment, or similar testing in place.
  - d. T.S. Section 6.8.1.c "Surveillance and Test Activities of Safety Related Equipment" requires that written procedures be established and implemented for such activities.

3. Determine whether licensee may have violated license requirements

- a. The licensee failed to adequately identify and perform post-maintenance testing to demonstrate that the valve would perform satisfactorily in service after valve maintenance was performed as discussed in paragraphs 2.a., 2.b., 2.c., and 2.d. Specifically, the post-maintenance test performed did not include a verification that the valve would relieve at its setpoint.
- b. As required by Section XI of the 1983 ASME Boiler and Pressure Vessel Code, article IWV-3512 Test Procedure, safety valve and relief valve setpoints shall be tested in accordance with ASME PTC 25.3-1976. Bench testing, with suitable hydraulic or pneumatic equipment, or testing in place with hydraulic or pneumatic assist equipment, is an acceptable method under PTC 25.3-1976.
- c. The licensee did not implement T.S. 6.8 "Procedures and Programs" requirements in an effective manner to ensure the valve was adequately tested.
- d. The positive displacement charging pump should have been declared inoperable if the relief valve has not been verified to operate at the required set point.

4. Develop a follow-up action plan to include:

a. Priority of effort

This is a relative high priority since the positive displacement charging pump should be declared inoperable if there is no assurance that the relief valve will operate at the required set point.

b. Reference documents

See paragraph 2

c. Licensee data to review

Post-maintenance test procedure for the relief valve

d. Personnel to be interviewed for information

(1) Maintenance Manager

(2) Head of On-site Engineering

(3) Operations Manager

(4) Plant Manager

e. Outside expert assistance

Not needed.

**J. INTERACTION WITH THE LICENSEE STAFF AND THE PUBLIC**

1. Can you accept a ride from the junior engineer when your car problem forces you to the side of the road on a relatively isolated section of the two-lane highway.
2. Are you allowed by regional policy to attend the company picnic and what limitations are imposed or ethical standards expected while attending such a function.
3. As your car is in the shop for an extended period of time and you were unable to secure a way home what are your options regarding the contacting of your neighbor who works at the training center to get a ride home and to the dealer in the morning to get a rental car. Is this a situation that you should go over with the Regional Office.
4. The Operator who was conducting the valve line up on the Containment Spray System what limits of authority and discussion are you bounded by when you noted the discrepancy regarding the mispositioned valve and associated valve position documentation
5. While observing the positive displacement pump operational test what limitations are in place if you disagree with the information provided by the licensee test staff. Who should you contact after you have reviewed your own references and have made a determination of your position on the testing requirements.
6. The information presented to you by the Plant Security Guard, off the record, how should it be handled. Who should you inform in your chain of command and how should this be handled.
7. The Plant Manager's phone call late in the evening regarding his version of your insistence regarding the Turbine Driven Auxiliary Feedwater Pump surveillance test. How should this issue be resolved and prevented in the future. What can you learn from the way a group of questions can be interpreted as an instance on a specific test.
8. How should you resolve the phone call from the local anti-nuclear activist and what information should you prepare before you return her phone call and who should you discuss her concerns with.

**K. FITNESS FOR DUTY AND JUDGMENT OF POSSIBLE CONDITIONS**

1. Consider that during the evening you have consumed two mixed drinks, two glasses of wine and as the Plant Manager called you were enjoying and after dinner brandy. That is a total of five drinks in a say 3-4 hour period. What potential problems can be expected if you were required to respond to a situation at the plant toward the end of the evening.
2. Considering that the plant was in a somewhat of operability issue with a EDG and the TDAFW pump out of service how could you have been prepared for an unexpected return to the plant.

## **LICENSEE EVENT REPORT (LER)**

### **FACILITY NAME**

Regional Plant

### **TITLE**

Pressurizer Power Operated Relief Valve Inoperability

### **EVENT DATE**

04/15/02

### **OPERATING MODE**

4 & 5

### **POWER LEVEL**

0.0

### **ABSTRACT**

On April 15, 2002, at 1430 hours with the plant in mode 4 at an RCS temperature of 270°F while preparations were being conducted to start up the reactor after a refueling outage, Power Operated Relief Valves (PORVs) PCV 455A and PCV 456 were found to be inoperable. The main disc guide had been installed upside down in each valve during the last refueling period while the head was removed from the reactor vessel. The valves were being repaired to correct seat leakage. Both valves were again disassembled, reassembled properly, and satisfactorily tested. This event is being reported under 10 CFR 50.73(a)(2)(i)(B) since it involves a condition prohibited by the plant's technical specifications.

### **BACKGROUND INFORMATION**

The Regional Plant T.S. 3.4.9.3 requires, in part, that two PORVs be operable: (1) in mode 4 when the temperature of any RCS cold leg is less than or equal to 290°F; (2) at all times in mode 5; and (3) in mode 6 when the head is on the reactor vessel and the RCS is not vented through a 3.4 square inch or larger vent. The T.S. Bases for Limiting Safety System Settings, Section 3/4.4.3, indicates that maintenance should be performed on PORVs to eliminate seat leakage during the next refueling outage after leakage is detected during mode 1, 2, or 3 operation.

### **EVENT DESCRIPTION**

During the period 15 to 22 March, 2002 with the plant in mode 6 and defueled, the PORVs were disassembled, repaired, and reassembled to correct excessive seat leakage. The main disc guide in each valve was installed upside down which caused the valves to be inoperable between March 22 to April 22, 2002. The problem was corrected following failure of the valves to pass surveillance test 4.4.3.2.1.a, full-stroke cycling with the block valves closed.

### **CAUSE OF THE EVENT**

The cause of the technical specification violation as a result of PORV inoperability was human error. The valve reassembly procedure did not caution the maintenance technician that the valve main disc guide could be installed upside down.

### **SAFETY ASSESSMENT**

This event is reportable under 10 CFR 50.73(a)(2)(i)(B) because a condition existed that is prohibited by the plant's technical specifications.

### **CORRECTIVE ACTION**

Subsequent disassembly and reassembly of the valves was completed successfully after consultation with the valve vendor. A cautionary note was written into the procedure to alert the technician to the possibility for installing the main disc guide upside down, thereby, preventing the valves from opening.

## **Case Study Number 2**

**CASE STUDY MODULE #2**  
**MASTER PRIORITY LIST (MPL)**

**A. High Priority**

1. Consider that during the evening you have consumed two mixed drinks, two glasses of wine and as the Plant Manager called you were enjoying and after dinner brandy. That is a total of five drinks in a say 3-4 hour period. What potential problems can be expected if you were required to respond to a situation at the plant toward the end of the evening.
2. Considering that the plant was in a somewhat of operability issue with a EDG and the TDAFW pump out of service how could you have been prepared for an unexpected return to the plant.
3. The Plant Manger's phone call late in the evening regarding his version of your insistance regarding the Turbine Driven Auxiliary Feedwater Pump surveillance test. How should this issue be resolved and prevented in the future. What can you learn from the way a group of questions can be interpreted as an instance on a specific test.
4. How should you resolve the phone call from the local anti-nuclear activist and what information should you prepare before you return her phone call and who should you discuss her concerns with.
5. The Operator who was conducting the valve line up on the Containment Spray System what limits of authority and discussion are you bounded by when you noted the discrepancy regarding the mispositioned valve and associated valve position documentation

**B. Mid Priority**

1. While observing the positive displacement pump operational test what limitations are in place if you disagree with the information provided by the licensee test staff. Who should you contact after you have reviewed your own references and have made a determination of your position on the testing requirements.
2. The information presented to you by the Plant Security Guard, off the record, how should it be handled. Who should you inform in your chain of command and how should this be handled.

C. Low Priority

1. Can you accept a ride from the junior engineer when your car problem forces you to the side of the road on a relatively isolated section of the two-lane highway.
2. Are you allowed by regional policy to attend the company picnic and what limitations are imposed or ethical standards expected while attending such a function.
3. As your car is in the shop for an extended period of time and you were unable to secure a way home what are your options regarding the contacting of your neighbor who works at the training center to get a ride home and to the dealer in the morning to get a rental car. Is this a situation that you should go over with the Regional Office.
4. Review of Terminal and Enabling objectives to verify that the important issues that a new inspector should have gleaned from the massive amount of information that is to be evaluated and reviewed on a daily basis by a resident inspector. These are the basis for the case studies and contain the important topical issues that the students should be able to take with them when they complete the seminar.

**Worksheet 1**

**Case Study #2 ETHICAL/OBJECTIVITY FINDING WORKSHEET**

**FINDING:**

**ETHICAL SIGNIFICANCE:**

**REQUIREMENT OR STANDARD:**

**APPARENT CAUSE:**

## **Worksheet 2**

### **HANDLING OF ETHICAL CONCERNS**

- **WHAT ARE OBSERVATIONS/PERCEPTIONS?**

A fact: Any detail noted during an inspection.

- **REQUIREMENT**

A legally binding obligation such as a statute, regulation, license condition, technical specification, safety analysis report, or order. Regional policy that affects the Resident and Resident Inspector's staff. (See Worksheet 3.)

- **ETHICAL SIGNIFICANCE**

The relationship between an ethical requirement or standard and a factual observation.

- **DOCUMENTATION**

Where possible, an observation would be related to a documented requirement or standard.

- **CONCLUSION**

An assessment that relates one or more findings to the broader context of a licensee's programs and performance.

## **Worksheet 3**

### **REFERENCE DOCUMENTS**

**CODE OF FEDERAL REGULATIONS**

**FINAL SAFETY ANALYSIS REPORT**

**TECHNICAL SPECIFICATIONS**

**OPERATING LICENSE**

**REGULATORY GUIDES**

**AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME) BOILER AND  
PRESSURE VESSEL CODE**

**INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)  
STANDARDS**

**AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) STANDARDS**

**REGIONAL INSTRUCTIONS REGARDING INTERACTION WITH THE LICENSEE AND  
LICENSEE STAFF.**

**Notes and or Comments:**

Expectations for Inspectors Seminar Lesson Plan  
Chapter 1, Inspector Behavior and Institutional Knowledge  
Date Revised:

1 References

- 1.1 Expectations for NRC Inspectors Course Manual, Chapter 1

2 Learning Objectives

- 2.1 State the definition of "objectivity" as it applies to inspection.
- 2.2 Explain NRC expectations for inspector dress, fitness for duty, and working hours.
- 2.3 Describe the limits of inspector authority at a regulated facility (i.e. describe what a licensee is required to provide an inspector and the limits of what an inspector can do).
- 2.4 Describe the attributes of inspector communications with licensee personnel.
- 2.5 Describe who in the licensee and NRC organizations should be informed regarding significant safety issues and who should be in attendance at entrance and exit meetings..
- 2.6 Describe the differences between policy, programs and procedures.
- 2.7 Describe the type of information that should be conveyed at entrance and exit meetings.
- 2.8 Explain the elements of dealing with allegers.
- 2.9 Explain the duties and responsibilities of the inspector during declared on-site emergencies.

3 Inspector Mind Set

Slide P-2

3.1 Objectivity:

- 3.1.1 "Objectivity exists when the inspector implements the inspection program, interfaces with the public and conducts personal and organizational relationships in an unbiased manner, free from both partiality and antagonism toward a licensee or vendor, or the employees of a licensee or vendor, as evidenced by patterns of the inspector's actions"

3.1.2 Objectivity Comprised of:

- 3.1.2.1 Independent Technical Judgement
- 3.1.2.2 Unbiased Attitude Toward Licensee
- 3.1.2.3 Conclusions Based on Fact

3.1.3 Inspector is not...

- 3.1.3.1 out to "get" licensee out to "commend" licensee
- 3.1.3.2 out to shut facility down
- 3.1.3.3 out to ensure continued operation
- 3.1.3.4 a consultant

3.2 Inspector Discretion

Slide P-3

- 3.2.1 Control of Safeguards Information
- 3.2.1.1 Sensitive non-classified information
- 3.2.2 Protection of Third Party Information
- 3.2.2.1 Proprietary information
- 3.2.2.2 INPO Documents
- 3.2.3 Allegation-Related Information
- 3.2.3.1 Content of allegations
- 3.2.3.2 Allegor identity protection
- 3.2.4 Criticism of Other Licensees or NRC Offices

Expectations for Inspectors Seminar Lesson Plan  
Chapter 1, Inspector Behavior and Institutional Knowledge  
Date Revised:

### 3.3 Inspector Authority

- 3.3.1 Atomic Energy Act and Energy Reorganization Act Slide P-4  
authorize NRC to license, regulate, and inspect  
nuclear material, facilities, and operators
- 3.3.2 NRC not empowered to regulate all nuclear  
applications.
- 3.3.2.1 DOE Facilities not included
- 3.3.2.2 Defense power reactors not included
- 3.3.3 Act authorizes NRC to conduct civil inspection  
and investigation
- 3.3.3.1 DOJ/FBI pursue criminal matters
- 3.3.4 Authority vested in the NRC does not reside in  
individual inspectors
- 3.3.4.1 Inspectors cannot execute a licensing action
- 3.3.4.2 Inspectors cannot issue enforcement sanctions
- 3.3.4.3 Inspectors cannot issue "orders"
- 3.3.4.4 Inspector's authority is in line with his/her  
role
- 3.3.4.5 Slide on cans and can'ts Slide P-5

must be granted "immediate unfettered access" to facilities (10CFR50.70(a)(3))	the inspector must present proper identification and the licensee must be allowed to conduct applicable access control measures for security, radiological protection, and personal safety
a licensee will permit inspection "...of his records, premises, activities and of licensed materials...	This does not allow inspectors to confiscate records or demand reproduction or access information that this not related to a regulated activity
Compares a licensee's activities to the standards specified in regulations or in binding commitments	The inspector is not authorized to compare the licensee's activities to a standard of "excellence" or attempt to compel the licensee to pursue an action based on "good practice"
Insist on compliance with regulations and license conditions	The inspector may not create a "Backfit" situation

Expectations for Inspectors Seminar Lesson Plan  
Chapter 1, Inspector Behavior and Institutional Knowledge  
Date Revised:

3.4 Backfit

- 3.4.1 "the modification of or addition to systems, structures, components, or design of a facility; or the design approval or manufacturing license for a facility; or the procedures or organization required to design, construct or operate a facility; any of which may result from a new or amended provision in the Commission rules or the imposition of a regulatory staff position interpreting the Commission rules that is either new or different from a previously applicable staff position...." Slide P-6
- 3.4.2 Commission allows backfits only when:
- 3.4.2.1 Substantial increase in overall protection involved, and
- 3.4.2.2 direct and indirect costs are justified in view of the increased protection
- 3.4.3 CRGR reviews proposed backfits. Slide P-7
- 3.4.3.1 recommends to EDO the approval or disapproval of backfits
- 3.4.3.2 objectives are:
- 3.4.3.2.1 to eliminate or remove unnecessary burdens on licensees
- 3.4.3.2.2 to reduce the exposure of workers to radiation in implementing requirements
- 3.4.3.2.3 conserve NRC resources while ensuring adequate protection of public health and safety

- 4 Inspector Bearing Slide P-8
- 4.1 Appropriate Dress
- 4.1.1 Dress appropriately for the planned activity
- 4.2 Ready for Duty
- 4.2.1 rested and alert
- 4.2.2 No alcohol in previous 5 hours
- 4.3 A Full Day's Work for a Full Day's Pay
- 4.3.1 Day begins upon arrival at site and ends on leaving site
- 4.4 Consideration for Licensees' Operations
- 4.4.1 Inspections are, by definition, burdensome
- 4.4.2 Don't add to burden by unnecessarily disrupting work
- 4.4.3 Schedule activities and interviews beforehand to the extent practicable
- 4.4.4 Don't create a disturbance in the control room
- 4.4.4.1 Limit discussions with operators to business-related issues
- 4.4.4.2 Don't obstruct operators' access to controls or views of indications

Expectations for Inspectors Seminar Lesson Plan  
Chapter 1, Inspector Behavior and Institutional Knowledge  
Date Revised:

- 4.5 Avoiding Situations wherein Objectivity Can Be Questioned Slide P-9
  - 4.5.1 Do not socialize with licensee employees (unless prior relationship exists)
  - 4.5.2 Maintain a businesslike demeanor
  - 4.5.3 Adhere to government-wide ethics regulations
  - 4.5.4 When in doubt consult supervisor or OGC
- 5 Communications
  - 5.1 Use moderate, unbiased language Slide P-10
    - 5.1.1 Applies to all communication inside and outside NRC
      - 5.1.2 Don't "cry wolf"
      - 5.1.3 Don't be overly subjective
      - 5.1.4 Do not threaten licensee
        - 5.1.4.1 NEVER threaten licensees with NRC action to achieve a desired outcome
        - 5.1.4.2 The authority to modify, suspend, or revoke licenses does not reside in the inspector
        - 5.1.4.3 The authority to issue an order does not reside in the inspector
        - 5.1.4.4 The authority to issue enforcement actions does not reside in the inspector
      - 5.1.5 Be sensitive to the licensees' tendencies to defer to NRC
        - 5.1.5.1 Don't leave incorrect impressions about NRC expectations
        - 5.1.5.2 Don't "use" licensees' desire to be on good terms with NRC to leverage an action that is outside the regulations (e.g. good practices)
  - 5.2 Talk to the right person Slide P-11
    - 5.2.1 Licensee's Organization
      - 5.2.1.1 Establish points of contact (licensing dept personnel, technical personnel, supervisory and management personnel)
      - 5.2.1.2 When in doubt, talk to NRC resident inspectors
    - 5.2.2 NRC Organization
      - 5.2.2.1 Resident inspectors for site-specific and some issue-specific information
      - 5.2.2.2 Branch Chiefs for inspection-related issues
      - 5.2.2.3 NRC technical specialists for issues beyond your expertise
      - 5.2.2.4 Allegations and enforcement staffers for issues in those programs

Expectations for Inspectors Seminar Lesson Plan  
Chapter 1, Inspector Behavior and Institutional Knowledge  
Date Revised:

- 5.3 Include the right information Slide P-12
- 5.3.1 Entrance meetings
- 5.3.1.1 What is to be inspected (inspection scope)
- 5.3.1.2 What records, personnel, and activities need to be made available
- 5.3.1.3 Opportunities for debriefings and scheduling the exit meeting
- 5.3.2 Exit meetings
- 5.3.2.1 Brief restatement of purpose of inspection
- 5.3.2.2 Summary of findings
- 5.3.2.3 Point out that findings are predecisional and subject to internal review and modification
- 5.3.2.4 General conclusions based on facts and observations
- 6 Institutional Knowledge Slide P-13
- 6.1 Important that the inspector know about:
- 6.1.1 How the NRC works
- 6.1.2 How NRC regulations and other documents interrelate
- 6.1.3 The content of regulations and other documents related to your specialty area
- 6.1.4 General understanding of requirements outside your specialty area
- 6.1.5 Maintaining knowledge current
- 6.2 NRC regulatory policy is made by the commission itself Slide P-14
- 6.2.1 Staff develops policy options
- 6.2.2 Commission votes on accepting options or accepting options as modified by the commission
- 6.2.3 Policies are not regulatory requirements.
- 6.2.3.1 They form the basis for regulation and the direction in which regulation will proceed.
- 6.2.4 The inspector may not force a licensee to adhere to a policy unless it has been codified or made part of a license condition or order.

Expectations for Inspectors Seminar Lesson Plan  
Chapter 1, Inspector Behavior and Institutional Knowledge  
Date Revised:

- 6.3 Procedures Slide P-15
  - 6.3.1 Procedures developed to implement higher-level policies or mandates within the NRC
  - 6.3.2 Sources for procedures include legislation, Executive Orders of the President, commission policies, or management directives and decisions
  - 6.3.3 Inspector must become familiar with the procedures that apply to the job function and adhere to them.
  - 6.3.4 If the inspector feels a procedure is flawed or is inadequate, management should be contacted
  - 6.3.5 Typical sources of procedural guidance:
    - 6.3.5.1 NRC Management Directives
    - 6.3.5.2 NRC Inspection Manual
    - 6.3.5.3 NRC Enforcement Manual
    - 6.3.5.4 NRC Field Policy Manual
    - 6.3.5.5 Regional Office Instructions
- 6.4 Programs Slide P-16
  - 6.4.1 Broad areas of NRC activity are grouped in "programs" and "Program Offices"
  - 6.4.2 Examples of programs and program offices:
    - 6.4.2.1 Reactor Oversight Program (Program Office: Office of Nuclear Reactor Regulation)
    - 6.4.2.2 Enforcement Program (Program Office: Office of Enforcement)
    - 6.4.2.3 Federal, State, and Tribal Liaison Program (Program Office: Office of State & Tribal Programs)
    - 6.4.2.4 The Agreement State Program (Program Office: Office of State & Tribal Programs)
    - 6.4.2.5 Spent Fuel Storage Inspection Program (Program Office: Office of Nuclear Material Safety and Safeguards)

Expectations for Inspectors Seminar Lesson Plan  
Chapter 1, Inspector Behavior and Institutional Knowledge  
Date Revised:

- 7      Caution and Contingency Planning Slide P-17
- 7.1      Travel-Related Problems
- 7.1.1      Before Travel
- 7.1.1.1      Be aware of any planned meetings on site
- 7.1.1.2      Be informed of route to the site
- 7.1.1.3      Be familiar with site access arrangements
- 7.1.1.4      Ensure site access training is up-to-date
- 7.1.1.5      Ensure inclusion on the "good Guy" list (particularly when traveling between regions and from headquarters)
- 7.1.2      Potential Travel-Related Problems
- 7.1.2.1      Flight Delays
- 7.1.2.2      Automotive Problems
- 7.1.2.3      Navigation Problems
- 7.1.3      Prepare Beforehand by Traveling With:
- 7.1.3.1      Phone numbers for key contacts (licensee and NRC) and Emergency phone number for travel agency
- 7.1.3.2      Confirm directions and access process with resident inspectors
- 7.1.3.3      Be prepared to provide early notification to licensee/NRC of late arrival
  
- 7.2      Allegations Slide P-18
- 7.2.1      Management Directive 8.8 and office instructions direct activities related to allegations
- 7.2.2      Receiving Allegations
- 7.2.2.1      Typical alleged is licensee employee with a safety concern, but can also be member of public, ex-employee, etc
- 7.2.2.2      Some contact allegations coordinator directly, others approach the inspector
- 7.2.2.3      Inspector must be sensitive to identity protection and discussions with alleged should be in a place the alleged is comfortable with
- 7.2.2.4      Inspectors should not meet alleged off-site without first discussing the matter with supervision and without another NRC employee present
- 7.2.2.5      Whether or not the information provided by the alleged is an "allegation" as defined by the program will be determined by others after the information is obtained - the inspector should treat the information provided by any concerned individual as an allegation
- 7.2.2.6      Inspector must listen respectfully to allegation and ask questions to bring out the necessary information - must know what information is required

Expectations for Inspectors Seminar Lesson Plan  
Chapter 1, Inspector Behavior and Institutional Knowledge  
Date Revised:

- 7.2.3 Processing allegations in the field Slide P-19
  - 7.2.3.1 Once received, the allegation must be transmitted to appropriate NRC personnel in a timely fashion
  - 7.2.3.2 Inspectors can get support for reporting allegations from:
    - 7.2.3.2.1 Supervisor (travel with supervisor's work and home phone numbers)
    - 7.2.3.2.2 Office Allegations Coordinator
    - 7.2.3.2.3 Headquarters Operations Officers/Ops Center - for after hours help in contacting NRC personnel for support
  - 7.2.3.3 For allegations of significant safety issues, real-time determination of required actions may be necessary - contact supervisor prior to acting
  - 7.2.3.4 All allegations must be documented - become familiar with the location of forms, or travel with blank forms.
- 7.3 Emergencies Slide P-20
  - 7.3.1 NRC Emergency Response
  - 7.3.2 NRC Incident Response Plan documented in Management Directive 8.2
  - 7.3.3 Concept of Emergency Response:
    - 7.3.3.1 Two primary decision makers in a radiological emergency - Licensee and state or local government
    - 7.3.3.2 NRC role:
      - 7.3.3.2.1 Monitor licensee actions to ensure appropriate protective action recommendations are provided to off-site officials
      - 7.3.3.2.2 Support state and local officials by performing independent assessments
      - 7.3.3.2.3 Conduit of technical information to other federal agencies
      - 7.3.3.2.4 In extreme and unique situations, direct licensee's response by issuing orders

Expectations for Inspectors Seminar Lesson Plan  
Chapter 1, Inspector Behavior and Institutional Knowledge  
Date Revised:

- |          |   |            |
|----------|---|------------|
| 7.3.4    | Inspector Responses to Emergencies  | Slide P-21 |
| 7.3.4.1  | Determine, upon arrival at facility, where to report if an emergency is declared  |            |
| 7.3.4.2  | If emergency is declared, report to that location and provide support as directed by the senior resident inspector                                  |            |
| 7.3.4.3  | If in the control room when the event occurs:   |            |
| 7.3.4.4  | be mindful that inspector may present an obstacle to operator response  |            |
| 7.3.4.5  | Adhere to licensee's rules for access to control room areas   |            |
| 7.3.4.6  | limit conversations to those that are absolutely required - try to talk with knowledgeable personnel <u>not</u> involved in responding to the event |            |
| 7.3.4.7  | do not crowd or distract operators  |            |
| 7.3.4.8  | do not get in the way of control room indications without permission  |            |
| 7.3.4.9  | avoid coming into contact with control boards   |            |
| 7.3.4.10 | Throughout emergency, try to get the "big picture" of the event and the licensee's emergency action level determinations                            |            |

Expectations for Inspectors Seminar Lesson Plan  
Chapter 2, Regulation and Regulatory Framework  
Date Revised:5/02

1 References

- 1.1 Expectations for NRC Inspectors Course  
Manual, Chapter 2

2 Learning Objectives

Slide P-2-1

- 2.1 Describe the NRC Mission and the source of the agency's legislative mandate.
- 2.2 Describe the degree to which legislation, regulations, policy statements, licenses, and NRC-generated guidance documents are binding upon licensees and NRC personnel.
- 2.3 Describe the purposes and content of the Principles of Good Regulation.
- 2.4 Describe the relationship between safety and compliance with regulatory requirements.
- 2.5 Describe the enforcement sanctions available to the NRC for identified noncompliances.
- 2.6 Describe the following key elements of the NRC Strategic Plan and how the Plan relates to inspectors' activities:
- Strategic Goals
  - Performance Goals
  - Performance Goal Strategies
  - Performance Measures
- 2.7 Define the following terms with respect to the NRC Reactor Oversight Program:
- Strategic Performance Area
  - Cornerstones
  - Cross-Cutting Issues
  - Performance Indicators
  - Significance Determination Process
  - Plant Performance Reviews

3 Mission and Mandate

Slide P-2-2

3.1 Mission:

- 3.1.1 "The NRC's mission is to regulate the Nation's civilian use of byproduct, source, and special nuclear materials to ensure adequate protection of public health and safety, to promote the common defense and security, and to protect the environment."

3.2 Mandate Derived From:

- 3.2.1 Atomic Energy Act of 1954
- 3.2.2 Energy Reorganization Act of 1974

4 Conduct of Regulation

Slide P-2-3

4.1 Principles of Good Regulation

- 4.1.1 INDEPENDENT.
- 4.1.2 OPEN.
- 4.1.3 EFFICIENT.
- 4.1.4 CLEAR.
- 4.1.5 RELIABLE.

Expectations for Inspectors Seminar Lesson Plan  
Chapter 2, Regulation and Regulatory Framework  
Date Revised:5/02

- 4.2 NRC Organizational Values Slide P-2-4
  - 4.2.1 Integrity in our working relationships, practices and decisions.
  - 4.2.2 Excellence both in our individual and collective actions.
  - 4.2.3 Service to the public, and others who are affected by our work.
  - 4.2.4 Respect for individuals' roles, diversity, and viewpoints.
  - 4.2.5 Cooperation in the planning, management, and work of the agency.
  - 4.2.6 Commitment to protecting the public health and safety.
  - 4.2.7 Openness in communications and decision-making.
- 4.3 NRC Vision
  - 4.3.1 In implementation of its mission, NRC's actions enable the Nation to safely and efficiently use nuclear materials. NRC's actions should be such that the public, those it regulates, and other stakeholders in the national and international nuclear community have the utmost respect for and confidence in the NRC.

- 5 Regulatory Tools Slide P-2-5
  - 5.1 Legislation
    - 5.1.1 Legislation - a proposed or enacted law or group of laws
    - 5.1.2 Compliance is compulsory for all affected Americans - including NRC
    - 5.1.3 Example of Applicable Legislation:
      - 5.1.3.1 Administrative Procedures Act
        - 5.1.3.1.1 Ensures information about NRC organization and activities is promulgated to public
        - 5.1.3.1.2 Requires consultation with public before codifying regulations
        - 5.1.3.1.3 Requires public commission meetings
        - 5.1.3.1.4 Describes adjudication process

Expectations for Inspectors Seminar Lesson Plan  
Chapter 2, Regulation and Regulatory Framework  
Date Revised:5/02

- 5.2 Regulations Slide P-2-6
- 5.2.1 Regulation - "A governmental order having the force of law"
- 5.2.2 Violating an NRC regulation is a civil, versus criminal, matter
- 5.2.3 Regulations apply to all affected Americans
- 5.2.4 Staff develops regulations
- 5.2.5 Commission reviews and approves or rejects regulations
- 5.2.6 Staff inspects for compliance with regulations
- 5.2.7 Staff enforces regulations as necessary
- 5.2.8 Regulations associated with NRC are in Title 10, "Energy," of the Code of Federal Regulations
- 5.2.8.1 Chapter 1, "Nuclear Regulatory Commission"
- 5.2.8.1.1 Parts 0-99
- 5.3 Examples of applicable regulations: Slide P-2-7
- 5.3.1 Part 2 Policy and procedures related to issuing, amending, or revoking an operating license; enforcement actions; and public rule making.
- 5.3.2 Part 19 Requirements for disseminating information to nuclear plant workers concerning radiological working conditions, enforcement actions, etc. Rules of conduct for NRC inspections.
- 5.3.3 Part 20 Standards for protection against radiation.
- 5.3.4 Part 50 Rules for license application, content of applications, facility design requirements, and reporting of events to the NRC.
- 5.3.4.1 Appendix A - General Design Criteria
- 5.3.4.2 Appendix B - Quality Assurance Criteria
- 5.3.5 Part 55 Rules and procedures for the licensing of reactor operators.
- 5.3.6 Part 73 Requirements related to physical protection of the facility to protect against radiological sabotage and theft of special nuclear material.
- 5.3.7 Part 100 Reactor site criteria including population density, seismic and geologic evaluations.

Expectations for Inspectors Seminar Lesson Plan  
Chapter 2, Regulation and Regulatory Framework  
Date Revised:5/02

- 5.4 Regulations the "bread and Butter" of inspectors Slide P-2-8
  - 5.4.1 Intimate familiarity with regulations key to inspection
  - 5.4.2 Compliance is compulsory, but not all regulations apply at all facilities
    - 5.4.2.1 Example - 10 CFR 50.62, "Requirements for reduction of risk from anticipated transients without scram (ATWS) events for light-water-cooled nuclear power plants" begins:
      - 5.4.2.2 "(a) Applicability. The requirements of this section apply to all commercial light-water-cooled nuclear power plants, other than nuclear power reactor facilities for which the certifications required under §§50.82(a)(1) have been submitted."
    - 5.4.3 Important to establish which regulations apply to facility being inspected
  - 5.4.4 Regulations necessarily written in very generic terms Slide P-2-9
    - 5.4.4.1 Phrases like "appropriate to the circumstances," "promptly," and "suitable" abound
    - 5.4.4.2 What is "appropriate," "prompt," or "suitable?" Who decides?
    - 5.4.4.3 Inspector will make first, but not necessarily final, determination
    - 5.4.4.4 Supervisory and peer review will also be applied
    - 5.4.4.5 However, only Office of General Counsel can make an "official" interpretation
      - 5.4.4.5.1 10 CFR 50.3 - "Except as specifically authorized by the Commission in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be recognized to be binding upon the Commission."

- 5.4.5 Safety and Compliance Slide P-2-10
  - 5.4.5.1 Regulations do not each contribute equally to safety
  - 5.4.5.2 Is a violation of a paperwork-oriented violation as important as one that directly impacts the operability of safety-related components?
  - 5.4.5.3 Is it worth our time to enforce "lesser" regulations?
  - 5.4.5.4 What if the effort expended to inspect and comply with "lesser" regulations causes us to lose focus on the more risk-significant issues?
  - 5.4.5.5 In such a case, is compliance compatible with safety?
  - 5.4.5.6 Should we allow a licensee to stop complying with some regulations, based on a licensee's assessment of the contribution of those regulations to safety? If so, where does it end?
  - 5.4.5.7 In 1997, commission approved important discussion of "safety and compliance" In summary: Slide P-2-11
    - 5.4.5.7.1 "Safety" means freedom from exposure to danger, or protection from harm
    - 5.4.5.7.2 "Compliance" means meeting applicable regulatory requirements
    - 5.4.5.7.3 The nexus between safety and compliance:
      - 5.4.5.7.3.1 Safety is the fundamental objective, compliance plays fundamental role in giving NRC confidence that safety is maintained
      - 5.4.5.7.3.2 Adequate protection is presumptively assured by compliance with NRC requirements
      - 5.4.5.7.3.3 New information may indicate that an unforeseen hazard exists - if so NRC can order actions above and beyond regulations
    - 5.4.5.7.4 NRC has authority to allow continued operation despite the existence of a noncompliance when it is not significant to risk
    - 5.4.5.7.5 Regulations which have no safety benefit should be modified or removed
    - 5.4.5.7.5.1 NRC should use risk-informed approach whenever possible when adding, removing, or modifying regulations and allocating resources

Expectations for Inspectors Seminar Lesson Plan  
Chapter 2, Regulation and Regulatory Framework  
Date Revised:5/02

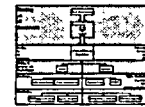
- 5.5 Guidance Documents Slide P-2-12
- 5.5.1 Because regulations are generic in nature, many forms of guidance documents exist to give inspector and licensee a better sense of what the regulations require
- 5.5.2 **Regulatory Guides** - describe acceptable ways to meet particular regulations.
- 5.5.2.1 Compliance not required
- 5.5.2.2 Failure to comply may or may not indicate a violation of regulations
- 5.5.3 **Standard Review Plans** - Describe how a license application is to be reviewed by NRC staff.
- 5.5.3.1 Compliance not required
- 5.5.3.2 Failure to comply does not indicate a violation of regulations, but may slow review process or result in a denial of a license or license amendment
- 5.5.4 **Inspection Guidance** - ensure consistent inspections nation-wide.
- 5.5.4.1 Compliance not required
- 5.5.4.2 Failure to comply may or may not indicate a violation of regulations
- 5.5.5 **Generic Communications** - for safety issues that might be concerns for multiple licensees Slide P-2-13
- 5.5.5.1 *Regulatory Issues Summaries* - used when no response or action required from licensee. Informational.
- 5.5.5.2 *Information Notices* - Informs addressees of significant operating problems. Licensees expected to review for applicability and consider actions required to avoid similar problems.
- 5.5.5.3 *Bulletins* - Informs addressees of "urgent" safety issues and may request information or action and requires response.
- 5.5.5.4 *Generic Letters* - issued to address safety issues, usually requesting licensees to perform analyses, perform corrective actions, submit technical information, or participate in voluntary pilot programs
- 5.5.6 **NRC Reports** - "NUREGS" covering technical topics informing licensees of operating experience, research, accumulated data, technical information, etc.
- 5.5.6.1 Compliance not required
- 5.5.6.2 However, staff may incorporate NUREGs into regulations by reference

- 5.6 Other Documents Slide P-2-14
- 5.6.1 **Final Safety Analysis Report** - Submitted with each application for an operating license, it contains description of facility, design bases, limits on operation, and safety analysis for facility
- 5.6.1.1 Information contained in FSAR is considered a series of "commitments"
- 5.6.1.2 Failure to operate as described in the FSAR is considered a "deviation," as opposed to a "violation"
- 5.6.1.3 deviation - "a licensee's failure to satisfy a written commitment or to conform to the provisions of code, standard, guide, or accepted industry practice when the commitment, code, standard, guide, or practice involved has not been made a legally binding requirement of the commission, but is expected to be implemented."
- 5.6.2 **Technical Specifications** - Attached to an operating license as an appendix, technical specifications describe the required functionality of important systems, structures and components of the facility.
- 5.6.2.1 Because they are part of the operating license, compliance with the technical specifications is mandatory.
- 5.6.2.2 Failure to comply with technical specifications is a violation of the operating license.
- 5.7 Inspections Slide P-2-15
- 5.7.0.1 Verify that activities are properly conducted
- 5.7.0.2 Verify that equipment is properly maintained
- 5.7.0.3 Are performed on samples populations whose sizes are selected in a risk-informed way
- 5.7.0.4 Provide feedback for licensee management for corrective action, when appropriate
- 5.7.0.5 Produce data to allow assessment of licensees' performance
- 5.8 Enforcement Slide P-2-16
- 5.8.1 Enforcement sanctions:
- 5.8.1.1 **Notice of Violation** - cites noncompliance with a legally binding requirement
- 5.8.1.2 **Civil Penalty** - monetary penalty imposed for some violations
- 5.8.1.3 **Order** - written NRC directive to modify, suspend or revoke a license; to cease and desist from a given practice or activity; or to take such other actions as may be proper
- 5.8.1.4 **Non-cited Violation** - status of a minor violation for which the licensee is not cited, but is less formally notified

Expectations for Inspectors Seminar Lesson Plan  
Chapter 2, Regulation and Regulatory Framework  
Date Revised:5/02

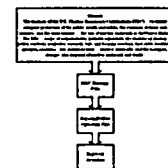
- 5.9 Policies and Procedures Slide P-2-17
  - 5.9.1 Ensure consistency across NRC
  - 5.9.2 Not enforceable with licensees, but provide structure for accomplishing mission
  - 5.9.3 Available publicly - enhance predictability of NRC
  - 5.9.4 Examples:
    - 5.9.4.1 *NRC Management Directives* - specify policy, objectives; responsibilities, authorities, etc in specific functional areas
    - 5.9.4.2 *Field Policy Manual* - provides policy and guidance to Regional Administrators from the EDO - compilation of EDO policies
    - 5.9.4.3 *NRC Inspection Manual* - delineates inspection requirements and provides guidance to the inspector
    - 5.9.4.4 *NRC Enforcement Manual* - defines the internal processes for taking enforcement actions

- 5.10 Integration/Hierarchy of documents Slide P-2-18




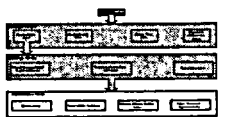
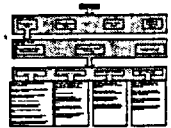
- 6 NRC Strategic Plan Slide P-2-19
  - 6.1 Examines NRC Mission
    - 6.1.1 Breaks mission down into series of arenas
    - 6.1.2 Establishes goals to be worked toward
    - 6.1.3 Develops strategies for meeting the goals
    - 6.1.4 Defines how performance is to be measured
    - 6.1.5 In Summary -
      - 6.1.5.1 Connects Mission to Individual Actions

- 6.1.5.2 NRC Strategic Plan Graphic Slide P-2-20



- 6.2 NRC Strategic Plan/Strategic Arenas Slide P-2-21
  - 6.2.1 Nuclear Reactor Safety
  - 6.2.2 Nuclear Materials Safety
  - 6.2.3 Nuclear Waste Safety
  - 6.2.4 International Nuclear Safety Support

Expectations for Inspectors Seminar Lesson Plan  
Chapter 2, Regulation and Regulatory Framework  
Date Revised:5/02

- |         |   |   |
|---------|---|---|
| 6.3     | NRC Strategic Plan/Strategic Goals  | Slide P-2-22  |
| 6.3.1   | Three broad goals   |   |
| 6.3.1.1 | Prevent radiation-related deaths and illnesses  |    |
| 6.3.1.2 | Promote common defense and security   |   |
| 6.3.1.3 | Protect Environment   |   |
| 6.3.2   | Measures for rating effectiveness of meeting strategic goals:   |   |
| 6.3.2.1 | No nuclear reactor accidents  |   |
| 6.3.2.2 | No deaths resulting from acute radiation exposures from nuclear reactors.   |   |
| 6.3.2.3 | No events at nuclear reactors resulting in significant radiation exposures.   |   |
| 6.3.2.4 | No radiological sabotages at nuclear reactors.  |   |
| 6.3.2.5 | No events that result in releases of radioactive material from nuclear reactors causing an adverse impact on the environment. |   |
| 6.4     | NRC Strategic Plan/Performance Goals  | Slide P-2-23  |
| 6.4.1   | Maintain safety   |   |
| 6.4.2   | Increase public confidence  |   |
| 6.4.3   | Effective, efficient, realistic actions   |   |
| 6.4.4   | Reduce unnecessary regulatory burden  |   |
| 6.5     | NRC Strategic Plan/Performance Goal Strategies  | Slide P-2-24  |
| 6.5.1   | Strategies exist under each performance goal  |  |
| 6.5.2   | Satisfying strategies contributes to meeting goals  |   |
| 6.5.3   | Performance metrics developed to determine if strategies are successful   |   |

Expectations for Inspectors Seminar Lesson Plan  
Chapter 2, Regulation and Regulatory Framework  
Date Revised:5/02

7 Reactor Oversight Program/History Slide P-2-25

7.1 Pre-2000 Program

7.1.1 Inspection program did not always focus on the most important safety issues - risk information only informally applied

7.1.2 Enforcement Program

7.1.2.1 focused on causes of violations as well as on consequences - at times, root cause was considered more significant than the actual consequences of a violation

7.1.2.2 Severity of violations based on comparison of circumstances to pre-written examples - subjectivity introduced by use of words like "significant" and "severe".

7.1.2.3 Severity levels were not risk-informed and hard to defend

7.1.3 Systematic Assessment of Licensee Performance (SALP) Program

7.1.3.1 large amount of information considered in reaching group consensus of performance every 18-24 months

7.1.3.2 Licensee performance rated as category 1,2, or 3 in 4 broad functional areas

7.1.3.3 Very subjective process

7.1.4 Resource Management

Slide P-2-26

7.1.4.1 Good performing plants received less inspection

7.1.4.1.1 including fewer resident inspectors

7.1.4.1.2 "N+1" was the rule, but strong performers got "N"

7.1.4.1.3 Less inspection yielded fewer findings

7.1.4.1.4 Fewer negative findings perpetuated good ratings

7.1.4.1.5 Good ratings extended SALP cycle from 18 to 24 months between assessments

7.1.4.1.6 Performance could decline markedly before it was recognized

7.1.4.2 Poor performing plants received more inspection

7.1.4.2.1 More inspection yielded more findings

7.1.4.2.2 more negative findings perpetuated poor ratings

7.1.4.2.3 performance could "appear" worse than was actually the case

Expectations for Inspectors Seminar Lesson Plan  
Chapter 2, Regulation and Regulatory Framework  
Date Revised:5/02

- 7.1.5 Despite limitations of old oversight program, performance overall improved from mid-1980 levels Slide P-2-27
- 7.1.5.1 In 1980s, typical plant tripped about 8 times/year
- 7.1.5.2 By 1990s, plants averaged less than 1 trip/year
- 7.1.5.3 HOWEVER - industry averages meaningless at a true problem plant
- 7.1.5.4 however good average performance is, there can still be problem plants that pose unacceptable risk to the public
- 7.1.5.5 Average performance can decline
- 7.1.6 The Challenge - develop new oversight program that:
- 7.1.6.1 recognizes improved performance
- 7.1.6.2 minimizes unnecessary burden
- 7.1.6.3 increases efficiency
- 7.1.6.4 is aligned to a particular plant's risk
- 7.1.6.5 is objective and understandable
- 7.1.6.6 is still effective in identifying and addressing poor performance
- 7.2 Reactor Oversight Program/New Program Slide P-2-28
- 7.2.1 Framework much like NRC strategic plan
- 7.2.2 Connects agency mission to areas of operational concern



- 7.3 Reactor Oversight Program/Performance Measurements Slide P-2-29
- 7.3.1 Plant performance measured by: Slide P-2-30
- 7.3.2 Performance Indicators (grouped by cornerstone):

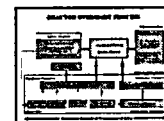
Unplanned Scrams	Reactor Coolant System (RCS) Activity
Scrams with Loss of Normal Heat Removal	Reactor Coolant System (RCS) Leakage
Unplanned Power Changes	Drill/Exercise Performance
Emergency AC Power System Safety System Unavailability	Emergency Response Organization (ERO)
High Pressure Injection System Safety System Unavailability	Drill Participation
BWR Heat Removal System/PWR Auxiliary Feedwater System Safety System Unavailability	Alert and Notification System Reliability
Residual Heat Removal System Safety System Unavailability	Occupational Exposure Control Effectiveness
Safety System Functional Failures	Radiological Effluents
	Protected Area (PA) Equipment
	Personnel Screening Program
	FFD/Personnel Reliability Program

Expectations for Inspectors Seminar Lesson Plan  
Chapter 2, Regulation and Regulatory Framework  
Date Revised:5/02

7.3.2.1	Inspections	Slide P-2-31
7.3.2.1.1	Baseline Inspection Program	
7.3.2.1.1.1	common to all licensees	
7.3.2.1.1.2	based on cornerstone areas	
7.3.2.1.1.3	focused on risk-significant activities and systems	
7.3.2.1.1.4	reviews cross-cutting issues	
7.3.2.1.2	Additional Inspections beyond baseline performed "for cause"	
7.3.2.1.3	Types of inspections	
7.3.2.1.3.1	Complementary - Inspection of areas not covered by performance indicators	
7.3.2.1.3.2	Supplementary - Inspection of areas where performance indicators do not fully cover the inspection areas	
7.3.2.1.3.3	Verification - inspections to verify the accuracy of performance indicators reported by licensees	
7.3.3	Performance Indicators + Inspections = Plant Assessment	
7.4	Reactor Oversight Program/Significance Determination	Slide P-2-32
7.4.1	Significance Determination Process (SDP)	
7.4.1.1	Risk-informed framework for determining significance of findings	
7.4.1.2	simplified framework for estimating increase in core damage frequency based on finding	
7.4.2	Specific SDP processes exist for:	
7.4.2.1	At-power reactor issues	
7.4.2.2	Emergency preparedness	
7.4.2.3	Occupational radiation safety	
7.4.2.4	Public radiation safety	
7.4.2.5	Physical inspection	
7.4.2.6	Fire protection and post-fire safe shutdown	
7.4.2.7	Shutdown reactor issues	
7.4.2.8	Containment integrity	
7.4.2.9	Operator requalification and human performance	
7.4.3	SDP characterizes findings by color:	Slide P-2-33
7.4.3.1	Green A finding of very low safety significance	
7.4.3.2	White A finding of low to moderate safety significance.	
7.4.3.3	Yellow A finding of substantial safety significance.	
7.4.3.4	Red A finding of high safety significance.	

Expectations for Inspectors Seminar Lesson Plan  
Chapter 2, Regulation and Regulatory Framework  
Date Revised:5/02

- |         |  |  |
|---------|--|--|
| 7.5     | Reactor Oversight Program/Performance Assessment   | Slide P-2-34   |
| 7.5.1   | Quarterly  | Resident inspectors and regional inspection staff review performance of all plants in region (inspection results and performance indicators) |
| 7.5.2   | Semi-annually  | Review expanded to include inspection planning for next 12 months  |
| 7.5.3   | Annually   | More detailed performance review over previous 12 months and preparation of performance report and inspection plan for the next year         |
| 7.5.4   | Annually   | Senior management reviews agency actions for plants with significant performance problems. Results presented to commission                   |
| 7.5.5   | Declining performance identified in reviews lead to pre-determined agency actions. Possibilities include (but are not limited to): |  |
| 7.5.5.1 | Routine inspector and staff interaction  |  |
| 7.5.5.2 | Additional inspections   |  |
| 7.5.5.3 | Public meetings between licensee and NRC   |  |
| 7.5.5.4 | Order modifying, suspending or revoking license  |  |
| 7.6     | Reactor Oversight Program/Enforcement  |  |
| 7.6.1   | Violations of low safety significance involve no formal enforcement action   |  |
| 7.6.1.1 | Licensee expected to correct problem   |  |
| 7.6.2   | For higher safety significance, Notice of Violation issued   |  |
| 7.6.2.1 | Licensee must respond formally and describe corrective actions   |  |
| 7.6.2.2 | Violations with unusually high significance may include civil penalty  |  |
| 7.7     | Reactor Oversight Program/The Big Picture  | Slide P-2-36   |



## LESSON PLAN

PROGRAM: NRC INSPECTOR QUALIFICATION PER MC 1245

COURSE: Expectations for Inspectors Seminar (EIS)

COURSE NO: G-104

LESSON MODULE: CASE STUDY NUMBER 1 LESSON MODULE NO: EIS Case Study 1  
REVISION NO: 0

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### INSTRUCTIONAL AIDS:

- |                       |                   |
|-----------------------|-------------------|
| 1. Transparencies     | 3. White Board    |
| 2. Overhead Projector | 4. Student Manual |
- 

### TRAINEE MATERIAL:

1. Student Manual,
  2. Reference Bibliography and Library
- 

AUTHORED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

REVIEWED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_  
(COMPONENT CHIEF)

DATE: \_\_\_\_\_

**Expectations for Inspectors Seminar (EIS) CASE STUDY MODULE #1**  
**MASTER PRIORITY LIST (MPL)**

A. High Priority

1. Reactor operator consuming alcohol.
2. Press interest in the NRC Inspector winning the charity prize at the Licensee picnic
3. Unescorted former employee in the Protected Area.
4. Interaction with the Licensee staff on off duty type situations. Riding to and from work with your neighbor who works at the site.
5. The basis for the principles of good regulation and knowing when to say that you are being asked by too many organizations for a piece of your time which in the sum will exceed that which is available is an important issue in this case study

B. Mid Priority

1. Overload of information requested by the Region and the Section Chief for routine information.
2. Research work can take up too much of the Resident Inspector's time for data that the Regional Office should be able to obtain from its own resources.
3. Time management of the Residents work hours and obligations. To many outside time grabbers are taking each a little piece of your time and as a result you are not able to complete your own tasks as a result.

C. Low Priority

1. Research projects on power reduction and power-operated valves for the Regional office and NRR Project Manager.
2. Review of Terminal and Enabling objectives to verify that the important issues that a new inspector should have gleaned from the massive amount of information that is to be evaluated and reviewed on a daily basis by a resident inspector. These are the basis

## TRAINER PREPARATION SHEET

### PROGRAM FOR TRAINING

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for the case studies and contain the important topical issues that the students should be able to take with them when they complete the seminar.

**COURSE TITLE:** Expectations for Inspectors Seminar (EIS)

**LESSON MODULE:** Expectations for Inspectors Seminar (EIS) Case Study Number 1

**JOB POSITION:** NRC Resident Inspector/Regional Based Inspectors

**TASKS:** The tasks covered by this lesson are broadly described in the terminal learning objectives. The intent of this lesson is to focus on the day-to-day activities of a resident inspector in carrying out the responsibilities and tasks of the position. The applicability to the regional based inspector is in understanding the many demands on the Resident and Senior Resident Inspector's time during a routine day of at site inspection and regulation of the licensee activities.

#### **LESSON OBJECTIVES:**

#### **TERMINAL LEARNING OBJECTIVES:**

1. Demonstrates and applies the principles of good regulation to help ensure that regulatory activities are appropriate, consistent, and of the highest quality.
2. Understands the organizational structure of the Commission, Offices, divisions, their mandate, roles and responsibilities, and interrelationships
3. Appreciates the need to adhere to the principles of good regulation which means that the regulatory body carries out its activities in an independent, open, efficient, clear, reliable and fair manner
4. Recognizes, receives, documents and processes allegations in accordance with agency guidance.
5. Approaches others in a way that elicits cooperation
6. Recognizes and responds with an appropriate sense of urgency to problems/issues as they arise and ensures that others are appropriately informed.
7. Effectively exchanges information

## TRAINER PREPARATION SHEET

### PROGRAM FOR TRAINING

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- |   |   |
|---|---|
| 8. Listens attentively to the message being conveyed to obtain additional information or further instructions.                    | own ideas are not supported.  |
| 9. Directs relevant information to the right people.  | 19. Seeks to resolve differences, encouraging discussion and proposing mutually beneficial solutions.   |
| 10. Shares information with others in a clear, concise, logical and timely manner. Seeks clarification when lack of understanding | 20. Offers assistance and seeks assistance when necessary.  |
| 11. Takes notes when appropriate to recall important information and details.   | 21. Shows flexibility in response to change.  |
| 12. Seeks input from other experienced inspectors, and acts on the information constructively.                                    | 22. Conforms to NRC management expectations and adheres to licensee, regional, and HQ procedures applicable to inspector conduct while on site                                  |
| 13. Projects a positive and professional image of self and the agency.  | 23. Recognizes limits of authority and uses the authority in a fair and equitable manner  |
| 14. Communicate findings to regional management.  | 24. Honors commitments made and informs others in advance if commitment may be at risk.   |
| 15. Is not afraid to admit not having an answer; but investigates further and gets back with an answer.                           | 25. Asks for assistance and questions ways of doing things to acquire better understanding.   |
| 16. Maintains trust by giving consistent information and answers on issues.   | 26. Awareness of specific Regional expectations of inspectors in key area of communications, self-management, objectivity, and appearance of impropriety situations and ethics. |
| 17. Shares knowledge and information with team members.   | 27. Basically this objective is to provide the individual with  |
| 18. Maintains commitment to team objectives even when   |   |

## TRAINER PREPARATION SHEET

### PROGRAM FOR TRAINING

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the "deck plate" level information on how things are expected to be accomplished in a given region. This seminar provides the regional management a method to quickly get the individuals up to speed quickly and a forum to personally instill management expectations to the new hired individuals

#### ENABLING LEARNING OBJECTIVES:

- ELO-1.1 What is the Regional Policy on interaction with Licensee employees at the site on an off duty basis? How does this play into the neighbor's car problem?
- ELO-1.2 Can the Resident Inspectors attend Licensee functions such as the picnic?
- ELO-1.3 Being short handed, since the SRI is out recall to realize when you are being asked for too much information to be provided to the Regional Branch Chief and the NRR Project Manager. Know when you have reached your limit as to what you can do in one day. Ask for help when needed and let management know when too much is being requested in a short

period of time.

- ELO-1.4 Understands the organizational structure of the Commission, Offices, Divisions, their mandate, roles, and responsibilities and interrelationship
- ELO-1.5 Appreciates the need to adhere to the principals of good regulation which means that the regulatory body carries out its activities in an independent, open, efficient, clear, reliable, and fair manner.
- ELO-1.6 Recognizes and responds with an appropriate sense of urgency to incidents as they arise and ensures that others are appropriately informed.
- ELO-1.7 Uses sound judgment in exercising the appropriate level of caution, planning and contingency planning for various situations
- ELO-1.8 Effectively exchanges information between the site, regions and licensee
- ELO-1.9 Directs relevant information to the correct people

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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- ELO-1.10 Seeks input from experienced inspectors and acts on the information constructively
- ELO-1.11 Is not afraid to admit not having an answer but investigates further and gets back with an answer
- ELO-1.12 Maintains trust by giving consistent information and answers on issues.
- ELO-1.13 Conforms to NRC management expectations and adheres to licensee, regional, and HQ procedures applicable to inspector conduct while on site.
- ELO-1.14 Recognizes limits of authority and uses the authority in a fair and equitable manner
- ELO-1.15 Honors commitments made and informs others in advance if commitments may be at risk.
- ELO-1.16 Projects a positive and professional image of self and the agency

**DURATION:** ~2 hours

**SETTING:** Classroom - Lecture, Case Study

### INSTRUCTIONAL AIDS:

Transparencies: (See file Ch3-VU-Case1.wpd)

- EISCase1 VG01-1: Lesson Purpose  
EISCase1 VG01-2: Lesson Overview  
EISCase1 VG01-4: Plan and Prioritize  
EISCase1 VG0-5: Terminal Learning Objectives  
EISCase1-VG01-8: Enabling Learning Objectives

### Equipment:

Overhead Projector

### STUDENT MATERIALS:

Student Manual

### REFERENCES FOR COURSE DEVELOPMENT:

1. NRC Inspection Manual particular emphasis on Reactor Oversight Inspection Process
2. NRC Reactor Concepts Course and/or Power Plant Engineering

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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3. Title 10, Code of Federal Regulations

5. Regional Technical Specifications

4. Regional Nuclear Plant Final Safety Analysis Report

6. Various NRC Publications and Regional Policy Documents

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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### I. INTRODUCTION

#### A. Lesson Introduction

1. Course: Expectations for Inspectors Seminar (EIS)

The instructor may provide a different story or type of motivating statement related to the lesson to promote student interest.

2. Lesson: Case Study Number 1

3. Intended Audience: NRC Resident Inspector Candidates

#### B. Self-Introduction

1. Instructor Names

2. Backgrounds

3. Office Locations and Instructors' Availability

## **TRAINER PREPARATION SHEET PROGRAM FOR TRAINING**

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### **C. Class Policies**

1. Attendance Sheet
2. Adequate room lighting and temperature
3. Location of additional spaces for small group discussions
4. Housekeeping
5. Location of restrooms and eating facilities
6. Class breaks and lunch schedules
7. Trainee course evaluation responsibilities
8. Location of reference materials

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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### D. Lesson Purpose

### EISCase1-1 Lesson Purpose

#### LESSON PLAN:

Note: This Case Study is filled with "Red Herrings" as are all the Case Studies in the EIS. They are in these case studies to act as a technical distraction in this setting. These technical issues will be re-visited in the Field Techniques and Regulatory Processes Course which individuals in the training pipeline will attend. The objective of the EIS is to give the students an appreciation of the areas where subtle actions on the part of an NRC inspector can be misinterpreted by the public and lead to an appearance of impropriety and lack of objectivity. These seminars are to be used as a vehicle to transfer these subtle issues that can get an inspector into an area of concern without an actual lack of objectivity or inappropriate behavior.

The IES can be held with as few as five (5) individuals or as many as can be divided into equal groups of say four per group.

In the case of a IES with a small number of students use the small number to have each individual read over the case study and identify the important ethical, objectivity, and appearance of impropriety situations noted in the Case Study. After the students have read the case study and prepared their notes each of the students should present their findings to the entire group. In the case where a large number of individuals is attending the course then divide them into groups as equal as possible to allow for the groups to review the case study and make a presentation to the groups remaining.

The Seminar Leader/Instructor must be keenly aware of the direction that a group is heading. If a group heads off on a tangent the Seminar Leader/Instructor MUST direct the attention of the group back to the "ethical" issues at hand in the Case Study. Do not allow the technical issues to be the driving factor in these Case Studies. The objective of the IES is to pass on inspection ethical questions that

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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have come up in the case study and how these are to be handled in light of NRC Regulations and Regional Expectation.

Comment: When the individual will attend this seminar needs to be established in the training pipeline. Sending an individual too soon will result in insufficient background to understand the case study. Recommend that this be done after Reactor Concepts so that the individual has sufficient background to "speak" the language presented in the case study and will have an understanding of the terms and nomenclature in the case study.

This lesson is part of the Expectations for Inspectors Seminar (EIS). The intent of this course is to help bridge the gap between formal classroom training and real world on-the-job performance.

### **E. Lesson Overview**

### **EISCase1-Lesson Overview**

- |   |   |
|---|---|
| 1. Students have initial information the Student Manual on multiple issues to be researched and resolved. | Provide time periods for each phase of lesson |
| 2. An instructor will introduce the case study module and supply background and amplifying information.   | Scenario is a stand alone module              |

## **TRAINER PREPARATION SHEET PROGRAM FOR TRAINING**

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3. Following this presentation, students will work in small groups to assess the preliminary or initial information on multiple issues or potential problems that was contained in Student Manual. The end result of this group work will be an action plan with priorities for action.
  
4. Group action plans will be presented for review before proceeding to the research and resolution phase of the case study analysis. At a minimum, these presentations should cover:
  - a) Identification and prioritization of potential problems and issues.
  
  - b) Actions required to define and verify problems and issues.
  
  - c) Preliminary estimate of regulatory basis for taking action.
  
  - e) Estimate of need for outside assistance.

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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- f) Licensee and Regional officials to be interviewed for amplifying information regarding licensee and NRC policies regarding interaction with the licensee staff and press..
  - g) Indicate which areas of the scenario are problem areas for the Resident Inspector in this scenario regarding objectivity and interaction with the Licensee Staff on a Professional and personal basis, as well as the press.
5. After the students have read the case study and prepared their ideas each of the students should present their findings to the entire group. In the case where a large number of individuals is attending the course then divide them into groups as equal as possible to allow for the groups to review the case study and make a presentation to the groups remaining., the instructors may modify the plans to ensure that the objectives for the case study module will be addressed in the remaining time.

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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6. The Research and Resolution phase requires both research and resolution of problems and issues. This Case Study should include the areas of ethical interaction with the licensee staff on and off the site.

EISCase1-2 Lesson Overview (Continued)

- a) This phase will generally require individual work to address the requirements specified in the enabling and terminal learning objectives as applicable to an issue or problem.
- b) Each student will be assigned an aspect of the case study to resolve, document in writing, and possibly address the class. The following needs should be addressed in each assignment:
  - 1) Statement of problem or problems
  - 2) Actions taken to research problems
  - 3) Additional actions required with recommended time frame for completion

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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- 4) Legal or regulatory basis for action
  - 5) In addition to the technical issues faced the regulatory perception needs to be addressed regarding objectivity and Social interaction with the licensee.
  - 6) Recommendations to higher authority including items that the students indicate that Regional management should be kept aware of that transpire during the scenario
- c) Additional written information will be provided if requested by the students.
7. In the Review and Analysis phase, the case study will be reviewed and analyzed by the class. Selected students will present the results of their research and review in the form of:
- a) Ethical, objectivity, perception of working too closely with the licensee.

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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- b) Report to an instructor playing the role of regional branch chief on the ethical issues and proposed NRC action.
- 8. Regional Course Director performs review and critique.
  - a) Emphasize policy, practices, techniques, and processes.
  - b) Comment on student performance, as appropriate.

### II. PRESENTATION (Course Content)

This section will contain instructor activities during the various phases with information prompts to students when requested:

#### A. Course introduction using Instructor Manual Part I.

May not be necessary as this will be the third chapter of the course presentation materials. If necessary, allot about 15min

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## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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- |           |  |   |
|-----------|--|---|
| <b>B.</b> | <b>Students will review Student Manual and reference material provided in the Student Manual. They will identify problems or issues that require further action and assign priorities for follow-on activities.</b>                                | <b>About 30-45 minutes</b>  |
| <br>      |  |   |
| <b>C.</b> | <b>The instructors will compile a list of problems identified by the students, prioritize these problems with student input, and assign these problems to small groups using the master priority list provided at the end of this Lesson Plan.</b> | <b>About 10-15 minutes</b><br><b>Provide master priority list to each student</b> |
| <br>      |  |   |
| <b>D.</b> | <b>Instruct students to develop follow-up action plans using the example worksheets of Student Manual Module.</b>  | <b>About 30-45 minutes</b>  |
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## **TRAINER PREPARATION SHEET PROGRAM FOR TRAINING**

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- E. Selected students will present the results of their efforts in simulated exit meetings and verbal reports to NRC management personnel. The NRC course director will discuss the work shop at its conclusion covering policy, practices, techniques, processes, and student results. Collect student worksheets at conclusion of workshop.**

About 30-45 minutes

### **III. LESSON PLAN SUMMARY**

- A. Provide students time to ask questions.**
  - B. Provide a review of all objectives covering key points of each.**
  - C. Question trainees using the objectives as a guideline.**
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## **TRAINER PREPARATION SHEET PROGRAM FOR TRAINING**

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- D. Comment on responses and probe for student understanding of material.**
- E. Review obvious weak areas as extensively as necessary before continuing.**

### **IV. STUDENT EVALUATION**

Students will be asked to complete a course and instructor evaluation sheet. The purpose of this evaluation is to provide feedback to the course developers and the instructors.

### **V. INSTRUCTOR NOTES AND ERRATA**

Use this page to capture comments/errors noted in the text. This data is vital to improving the text for the next presentation of the course. The first few presentations will flush out any weakness in the material and presentation methodology. These comments should be forwarded to the TTC in electronic format to the attention of Stephen Koscielny (Email: [SSK@NRC.GOV](mailto:SSK@NRC.GOV)) and Russ Anderson (Email: [RLA@NRC.GOV](mailto:RLA@NRC.GOV)) for incorporation into the next revision of the text.

# LESSON PURPOSE

- **Bridge the Gap Between Formal Classroom Training and Real-World On-The-Job Performance**
- **Emphasize Trainee Application of Important, Job-Relevant Skills and Knowledge in Realistic Case Study Scenarios**
- **Organization of Inspector Competencies:**

<p>Group IV <b><u>Personal and Interpersonal Effectiveness</u></b></p> <p>Communication Teamwork Self-Management Information Technology</p>	<p>Group I <b><u>Legal Basis and Regulatory Processes</u></b></p> <p>Regulatory Framework</p>
<p>Group III <b><u>Regulatory Practices</u></b></p> <p>Inspection Emergency Response Problem Analysis Assessment and Enforcement</p>	<p>Group II <b><u>Technical Disciplines</u></b></p> <p>Basic Technologies (assumed) Fundamental Plant Design &amp; Operation Inspection Area Technical Expertise</p>

# **LESSON OVERVIEW**

- **The instructor will provide an introduction to the case study. This introduction may include explanatory information setting the stage for group and individual work. Personnel will be assigned to work groups.**
- **Students will review Student Manual Part A and reference material provided in the Student Manual. They will identify problems or issues that require further action and assign priorities for follow-on activities.**
- **The instructors will compile a list of problems identified by the students, prioritize these problems with student input, and assign these problems to small groups.**
  - **Develop follow-up action plans for each problem using the example worksheet provided.**

- **Selected students will present the results of their efforts in simulated verbal reports to NRC management personnel. The Regional course director will discuss the workshop at its conclusion covering policy, practices, techniques, processes, and student results.**

# **PLAN AND PRIORITIZE**

- 1. Prioritize and plan activities for addressing issues and potential problems with ethical significance or objectivity significance.**
- 2. Identify the basis for addressing each issue or potential problem.**
- 3. Develop a follow-up action plan to include:**
  - Priority of effort**
  - Possible need for outside expert assistance**
  - Need to inform Regional Management/HQ of issues which cannot be resolved in the time frame requested and why the problem areas exist as well as methods to overcome the ethical/ objectivity**

# **TERMINAL LEARNING OBJECTIVES**

- 1. Demonstrate and apply the principles of good regulation to help ensure that regulatory activities are appropriate, consistent, and of the highest quality.**
- 2. Understands the organizational structure of the Commission, Offices, divisions, their mandate, roles and responsibilities, and interrelationships**
- 3. Appreciates the need to adhere to the principles of good regulation which means that the regulatory body carries out its activities in an independent, open, efficient, clear, reliable and fair manner**
- 4. Recognizes, receives, documents and processes allegations in accordance with agency guidance.**
- 5. Approaches others in a way that elicits cooperation**
- 6. Recognizes and responds with an appropriate sense of urgency to problems/issues as they arise and ensures that others are appropriately informed.**
- 7. Effectively exchanges information**
- 8. Listens attentively to the message being conveyed to obtain additional information or further instructions.**

- 9. Directs relevant information to the right people.**
- 10. Shares information with others in a clear, concise, logical and timely manner. Seeks clarification when lack of understanding**
- 11. Takes notes when appropriate to recall important information and details.**
- 12. Seeks input from other experienced inspectors, and acts on the information constructively.**
- 13. Projects a positive and professional image of self and the agency.**
- 14. Communicate findings to regional management.**
- 15. Is not afraid to admit not having an answer; but investigates further and gets back with an answer.**
- 16. Maintains trust by giving consistent information and answers on issues.**
- 17. Shares knowledge and information with team members.**
- 18. Maintains commitment to team objectives even when own ideas are not supported.**
- 19. Seeks to resolve differences, encouraging discussion and proposing mutually beneficial solutions.**

# **TERMINAL LEARNING OBJECTIVES**

- 20. Offers assistance and seeks assistance when necessary.**
- 21. Shows flexibility in response to change.**
- 22. Conforms to NRC management expectations and adheres to licensee, regional, and HQ procedures applicable to inspector conduct while on site**
- 23. Recognizes limits of authority and uses the authority in a fair and equitable manner**
- 24. Honors commitments made and informs others in advance if commitment may be at risk.**
- 25. Asks for assistance and questions ways of doing things to acquire better understanding.**
- 26. Awareness of specific Regional expectations of inspectors in key area of communications, self-management, objectivity, and appearance of impropriety situations and ethics.**

# **ENABLING LEARNING OBJECTIVES**

- ELO-1.1**      What is the Regional Policy on interaction with Licensee employees at the site and on an off duty basis? How does this play into the neighbor's car problem?
- ELO-1.2**      Can the Resident Inspectors attend Licensee functions such as the picnic?
- ELO-1.3**      Being short handed, since the SRI is out recall to realize when you are being asked for too much information to be provided to the Regional Branch Chief and the NRR Project Manager. Know when you have reached your limit as to what you can do in one day. Ask for help when needed and let management know when too much is being requested in a short period of time.
- ELO-1.4**      Demonstrate the ability to respond effectively to media and public interest questions using NRC policy and guidance documents.
- ELO-1.5**      Understands the organizational structure of the Commission, Offices, Divisions, their mandate, roles, and responsibilities and interrelationships.
- ELO-1.6**      Appreciates the need to adhere to the principals of good regulation which means that the regulatory body

# **ENABLING LEARNING OBJECTIVES**

- carries out its activities in an independent, open, efficient, clear, reliable, and fair manner.
- ELO-1.7** Recognizes and responds with an appropriate sense of urgency to incidents as they arise and ensures that others are appropriately informed.
- ELO-1.8** Uses sound judgment in exercising the appropriate level of caution, planning and contingency planning for various situations.
- ELO-1.9** Effectively exchanges information between the site, regions and licensee.
- ELO-1.10** Directs relevant information to the correct people.
- ELO-1.11** Seeks input from experienced inspectors and acts on the information constructively.
- ELO-1.12** Is not afraid to admit not having an answer but investigates further and gets back with an answer.
- ELO-1.13** Maintains trust by giving consistent information and answers on issues.

# **ENABLING LEARNING OBJECTIVES**

- ELO-1.14**     **Conforms to NRC management expectations and adheres to licensee, regional, and HQ procedures applicable to inspector conduct while on site.**
- ELO-1.13**     **Recognizes limits of authority and uses the authority in a fair and equitable manner**
- ELO-1.15**     **Honors commitments made and informs others in advance if commitments may be at risk.**
- ELO-1.16**     **Projects a positive and professional image of self and the agency**

## LESSON PLAN-CASE STUDY #2

PROGRAM: NRC INSPECTOR QUALIFICATION PER MC 1245

COURSE: Expectations for Inspectors Seminar (EIS) COURSE NO: G-104

LESSON MODULE: CASE STUDY NUMBER 2 LESSON MODULE NO: EIS Case Study 2  
REVISION NO: 0

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### INSTRUCTIONAL AIDS:

- |                       |                   |
|-----------------------|-------------------|
| 1. Transparencies     | 3. White Board    |
| 2. Overhead Projector | 4. Student Manual |

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### TRAINEE MATERIAL:

1. Student Manual,
2. Reference Bibliography and Library

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AUTHORED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

REVIEWED BY: \_\_\_\_\_

DATE: \_\_\_\_\_

APPROVED BY: \_\_\_\_\_  
(COMPONENT CHIEF)

DATE: \_\_\_\_\_

**Expectations for Inspectors Seminar (EIS) CASE STUDY MODULE #1**  
**MASTER PRIORITY LIST (MPL)**

**A. High Priority**

1. Consider that during the evening you have consumed two mixed drinks, two glasses of wine and as the Plant Manager called you were enjoying and after dinner brandy. That is a total of five drinks in a say 3-4 hour period. What potential problems can be expected if you were required to respond to a situation at the plant toward the end of the evening.
2. Considering that the plant was in a somewhat of operability issue with a EDG and the TDAFW pump out of service how could you have been prepared for an unexpected return to the plant.
3. The Plant Manger's phone call late in the evening regarding his version of your insistence regarding the Turbine Driven Auxiliary Feedwater Pump surveillance test. How should this issue be resolved and prevented in the future. What can you learn from the way a group of questions can be interpreted as an instance on a specific test.
4. How should you resolve the phone call from the local anti-nuclear activist and what information should you prepare before you return her phone call and who should you discuss her concerns with.
5. The Operator who was conducting the valve line up on the Containment Spray System what limits of authority and discussion are you bounded by when you noted the discrepancy regarding the mispositioned valve and associated valve position documentation

**B. Mid Priority**

1. While observing the positive displacement pump operational test what limitations are in place if you disagree with the information provided by the licensee test staff. Who should you contact after you have reviewed your own references and have made a determination of your position on the testing requirements.
2. The information presented to you by the Plant Security Guard, off the record, how should it be handled. Who should you inform in your chain of command and how should this be handled.

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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### C. Low Priority

1. Can you accept a ride from the junior engineer when your car problem forces you to the side of the road on a relatively isolated section of the two-lane highway.
2. Are you allowed by regional policy to attend the company picnic and what limitations are imposed or ethical standards expected while attending such a function.
3. As your car is in the shop for an extended period of time and you were unable to secure a way home what are you options regarding the contacting of your neighbor who works at the training center to get a ride home and to the dealer in the morning to get a rental car. Is this a situation that you should go over with the Regional Office.
4. Review of Terminal and Enabling objectives to verify that the important issues that a new inspector should have gleaned from the massive amount of information that is to be evaluated and reviewed on a daily basis by a resident inspector. These are the basis for the case studies and contain the important topical issues that the students should be able to take with them when they complete the seminar.

**COURSE TITLE:** Expectations for Inspectors Seminar  
(EIS)

**JOB POSITION:** NRC Resident Inspector/Regional Based  
Inspectors

**LESSON MODULE:** Expectations for Inspectors Seminar  
(EIS) Case Study Number 1: Note: It is anticipated that two case studies will be conducted in an EIS. The initial presentations will have two case studies in the text. Subsequent sessions will have additional case studies to chose from.

**TASKS:** The tasks covered by this lesson are broadly described in the terminal learning objectives. The intent of this lesson is to focus on the day-to-day activities of a resident inspector in carrying out the responsibilities and tasks of the position. The applicability to the regional based inspector is in understanding the many demands

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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on the Resident and Senior Resident Inspector's time during a routine day of at site inspection and regulation of the licensee activities.

### LESSON OBJECTIVES:

#### TERMINAL LEARNING OBJECTIVES:

1. Demonstrates and applies the principles of good regulation to help ensure that regulatory activities are appropriate, consistent, and of the highest quality.
3. Understands the organizational structure of the Commission, Offices, divisions, their mandate, roles and responsibilities, and interrelationships
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8. Effectively exchanges information
9. Listens attentively to the message being conveyed to obtain additional information or further instructions.
10. Directs relevant information to the right people.
11. Shares information with others in a clear, concise, logical and timely manner. Seeks clarification when lack of understanding
11. Takes notes when appropriate to recall important information and details.
12. Seeks input from other experienced inspectors, and acts on the information constructively.
13. Projects a positive and professional image of self and the agency.
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16. Maintains trust by giving consistent information and answers on issues.

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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17. Shares knowledge and information with team members.
18. Maintains commitment to team objectives even when own ideas are not supported.
19. Seeks to resolve differences, encouraging discussion and proposing mutually beneficial solutions.
20. Offers assistance and seeks assistance when necessary.
21. Shows flexibility in response to change.
22. Conforms to NRC management expectations and adheres to licensee, regional, and HQ procedures applicable to inspector conduct while on site
23. Recognizes limits of authority and uses the authority in a fair and equitable manner
24. Honors commitments made and informs others in advance if commitment may be at risk.
25. Asks for assistance and questions ways of doing things to acquire better understanding.
26. Awareness of specific Regional expectations of inspectors in key area of communications, self-management, objectivity, and appearance of

impropriety situations and ethics.

27. Basically this objective is to provide the individual with the "deck plate" level information on how things are expected to be accomplished in a given region. This seminar provides the regional management a method to quickly get the individuals up to speed quickly and a forum to personally instill management expectations to the new hired individuals

### ENABLING LEARNING OBJECTIVES:

- |         |  |
|---------|--|
| ELO-1.1 | What is the Regional Policy on interaction with Licensee employees at the site on an off duty basis? How does this play into the neighbor's car problem?   |
| ELO-1.2 | Can the Resident Inspectors attend Licensee functions such as the picnic?  |
| ELO-1.3 | Being short handed, since the SRI is out recall to realize when you are being asked for too much information to be provided to the Regional Branch Chief and the NRR Project Manager. Know when you have reached your limit as to what you can do in one day. Ask for help when needed and let management know when too much is being requested in a short |

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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	period of time.	ELO-1.10	Seeks input from experienced inspectors and acts on the information constructively
ELO-1.4	Understands the organizational structure of the Commission, Offices, Divisions, their mandate, roles, and responsibilities and interrelationship	ELO-1.11	Is not afraid to admit not having an answer but investigates further and gets back with an answer
ELO-1.5	Appreciates the need to adhere to the principals of good regulation which means that the regulatory body carries out its activities in an independent, open, efficient, clear, reliable, and fair manner.	ELO-1.12	Maintains trust by giving consistent information and answers on issues.
		ELO-1.13	Conforms to NRC management expectations and adheres to licensee, regional, and HQ procedures applicable to inspector conduct while on site.
ELO-1.6	Recognizes and responds with an appropriate sense of urgency to incidents as they arise and ensures that others are appropriately informed.	ELO-1.14	Recognizes limits of authority and uses the authority in a fair and equitable manner
ELO-1.7	Uses sound judgment in exercising the appropriate level of caution, planning and contingency planning for various situations	ELO-1.15	Honors commitments made and informs others in advance if commitments may be at risk.
ELO-1.8	Effectively exchanges information between the site, regions and licensee	ELO-1.16	Projects a positive and professional image of self and the agency
ELO-1.9	Directs relevant information to the correct people	<b>DURATION:</b> ~2 hours	
		<b>SETTING:</b> Classroom - Lecture, Case Study	

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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### INSTRUCTIONAL AIDS:

Transparencies: (See file Ch4-VU-Case2.wpd)

EIS Case 2 VG01-1:	Lesson Purpose
EIS Case 2 VG01-2:	Lesson Overview
EIS Case 2 VG01-4:	Plan and Prioritize
EIS Case 2-VG01-5:	Terminal Learning Objectives
EIS Case 2-VG01-8:	Enabling Learning Objectives

Equipment:

Overhead Projector

### STUDENT MATERIALS:

Student Manual

### REFERENCES FOR COURSE DEVELOPMENT:

1. NRC Inspection Manual particular emphasis on Reactor Oversight Inspection Process
2. NRC Reactor Concepts Course and/or Power Plant Engineering
3. Title 10, Code of Federal Regulations
4. Regional Nuclear Plant Final Safety Analysis Report
5. Regional Technical Specifications
6. Various NRC Publications
7. Regional Policy Documents

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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### I. INTRODUCTION

#### A. Lesson Introduction

1. Course: Expectations for Inspectors Seminar (EIS)

The instructor may provide a different story or type of motivating statement related to the lesson to promote student interest.

2. Lesson: Case Study Number 2

3. Intended Audience: NRC Resident Inspector/Inspector Candidates

Material is designed so that if the ethical and objectivity pitfalls are avoided the inspector will not find an Article in the "Washington Post" regarding the case study scenario.

#### B. Self-Introduction (Note: Note Necessary if this is the second case study used)

1. Instructor Names

2. Backgrounds

3. Office Locations and Instructors' Availability

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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### C. Class Policies

1. Attendance Sheet
2. Adequate room lighting and temperature
3. Location of additional spaces for small group discussions
4. Housekeeping
5. Location of restrooms and eating facilities
6. Class breaks and lunch schedules
7. Trainee course evaluation responsibilities
8. Location of reference materials

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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### D. Lesson Purpose

### EIS Case 2 Lesson Purpose

#### LESSON PLAN:

Note: This Case Study is filled with "Red Herrings" as are all the Case Studies in the EIS. They are in these case studies to act as a technical distraction in this setting. These technical issues will be re-visited in the Field Techniques and Regulatory Processes Course which individuals in the training pipeline will attend. The objective of the EIS is to give the students an appreciation of the areas where subtle actions on the part of an NRC inspector can be misinterpreted by the public and lead to an appearance of impropriety and lack of objectivity. These seminars are to be used as a vehicle to transfer these subtle issues that can get an inspector into an area of concern without an actual lack of objectivity or inappropriate behavior.

The EIS can be held with as few as five (5) individuals or as many as can be divided into equal groups of say four per group.

In the case of a EIS with a small number of students use the small number to have each individual read over the case study and identify the important ethical, objectivity, and appearance of impropriety situations noted in the Case Study. After the students have read the case study and prepared their notes each of the students should present their findings to the entire group. In the case where a large number of individuals is attending the course then divide them into groups as equal as possible to allow for the groups to review the case study and make a presentation to the groups remaining.

The Seminar Leader/Instructor must be keenly aware of the direction that a group is heading. If a group heads off on a tangent the Seminar Leader/Instructor MUST direct the attention of the group back to the "ethical" issues at hand in the Case Study. Do not allow the technical issues to be the driving factor in these Case Studies. The objective of the EIS is to pass on inspection ethical questions that

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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have come up in the case study and how these are to be handled in light of NRC Regulations and Regional Expectation.

Comment: When the individual will attend this seminar needs to be established in the training pipeline. Sending an individual too soon will result in insufficient background to understand the case study. Recommend that this be done after Reactor Concepts so that the individual has sufficient background to "speak" the language presented in the case study and will have an understanding of the terms and nomenclature in the case study.

This lesson is part of the Expectations for Inspectors Seminar (EIS). The intent of this course is to help bridge the gap between formal classroom training and real world on-the-job performance.

### **E. Lesson Overview**

1. Students have initial information the Student Manual on multiple issues to be researched and resolved.
2. An instructor will introduce the case study module and supply background and amplifying information.

### **EIS Case 2-Lesson Overview**

Provide time periods for each phase of lesson

Scenario is a stand alone module

## TRAINER PREPARATION SHEET

### PROGRAM FOR TRAINING

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3. Following this presentation, students will work in small groups to assess the preliminary or initial information on multiple issues or potential problems that was contained in Student Manual. The end result of this group work will be an action plan with priorities for action.
4. Group action plans will be presented for review before proceeding to the research and resolution phase of the case study analysis. At a minimum, these presentations should cover:
  - a) Identification and prioritization of potential problems and issues.
  - b) Actions required to define and verify problems and issues.
  - c) Preliminary estimate of regulatory basis for taking action.
  - e) Estimate of need for outside assistance.

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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- f) Licensee and Regional officials to be interviewed for amplifying information regarding licensee and NRC policies regarding interaction with the licensee staff and press.
  - g) Indicate which areas of the scenario are problem areas for the Resident Inspector in this scenario regarding objectivity and interaction with the Licensee Staff on a Professional and personal basis, as well as the press.
5. After the students have read the case study and prepared their ideas each of the students should present their findings to the entire group. In the case where a large number of individuals is attending the course then divide them into groups as equal as possible to allow for the groups to review the case study and make a presentation to the groups remaining., the instructors may modify the plans to ensure that the objectives for the case study module will be addressed in the remaining time.

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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6. The Research and Resolution phase requires both research and resolution of problems and issues. This Case Study should include the areas of ethical interaction with the licensee staff on and off the site.

EIS Case 2- Lesson Overview (Continued)

- a) This phase will generally require individual work to address the requirements specified in the enabling and terminal learning objectives as applicable to an issue or problem.
- b) Each student will be assigned an aspect of the case study to resolve, document in writing, and possibly address the class. The following needs should be addressed in each assignment:
  - 1) Statement of problem or problems
  - 2) Actions taken to research problems
  - 3) Additional actions required with recommended time frame for completion

## **TRAINER PREPARATION SHEET PROGRAM FOR TRAINING**

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- 4) Legal or regulatory basis for action
- 5) In addition to the technical issues faced the regulatory perception needs to be addressed regarding objectivity and Social interaction with the licensee.
- 6) Recommendations to higher authority including items that the students indicate that Regional management should be kept aware of that transpire during the scenario
- c) Additional written information will be provided if requested by the students.
- 7. In the Review and Analysis phase, the case study will be reviewed and analyzed by the class. Selected students will present the results of their research and review in the form of:
  - a) Ethical, objectivity, perception of working too closely with the licensee.

## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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- b) Report to an instructor playing the role of regional branch chief on the ethical issues and proposed NRC action.
- 8. Regional Course Director performs review and critique.
  - a) Emphasize policy, practices, techniques, and processes.
  - b) Comment on student performance, as appropriate.

### II. PRESENTATION (Course Content)

This section will contain instructor activities during the various phases with information prompts to students when requested:

#### A. Course introduction using Instructor Manual Part I.

May not be necessary as this will be the fourth chapter of the course presentation materials. If necessary, allot about 15min

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## TRAINER PREPARATION SHEET PROGRAM FOR TRAINING

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- B. Students will review Student Manual and reference material provided in the Student Manual. They will identify problems or issues that require further action and assign priorities for follow-on activities.**

About 30-45 minutes

- C. The instructors will compile a list of problems identified by the students, prioritize these problems with student input, and assign these problems to small groups using the master priority list provided at the end of this Lesson Plan.**

About 10-15 minutes

Provide master priority list to each student

- D. Instruct students to develop follow-up action plans using the example worksheets of Student Manual Module.**

About 30-45 minutes

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## **TRAINER PREPARATION SHEET PROGRAM FOR TRAINING**

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- |  |                                   |
|--|-----------------------------------|
| <p><b>E. Selected students will present the results of their efforts in simulated exit meetings and verbal reports to NRC management personnel. The NRC course director will discuss the work shop at its conclusion covering policy, practices, techniques, processes, and student results. Collect student worksheets at conclusion of workshop.</b></p> | <p><b>About 30-45 minutes</b></p> |
|--|-----------------------------------|

### **III. LESSON PLAN SUMMARY**

- A. Provide students time to ask questions.**
  - B. Provide a review of all objectives covering key points of each.**
  - C. Question trainees using the objectives as a guideline.**
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## **TRAINER PREPARATION SHEET PROGRAM FOR TRAINING**

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- D. Comment on responses and probe for student understanding of material.**
- E. Review obvious weak areas as extensively as necessary before continuing.**

### **IV. STUDENT EVALUATION**

Students will be asked to complete a course and instructor evaluation sheet. The purpose of this evaluation is to provide feedback to the course developers and the instructors.

### **V. INSTRUCTOR NOTES AND ERRATA**

Use this page to capture comments/errors noted in the text. This data is vital to improving the text for the next presentation of the course. The first few presentations will flush out any weakness in the material and presentation methodology. These comments should be forwarded to the TTC in electronic format to the attention of Stephen Koscielny (Email: SSK@NRC.GOV) and Russ Anderson (Email:RLA@NRC.GOV) for incorporation into the next revision of the text.

# LESSON PURPOSE

- Bridge the Gap Between Formal Classroom Training and Real-World On-The-Job Performance
- Emphasize Trainee Application of Important, Job-Relevant Skills and Knowledge in Realistic Case Study Scenarios
- Organization of Inspector Competencies:

<p>Group IV <b><u>Personal and Interpersonal Effectiveness</u></b></p> <p>Communication Teamwork Self-Management Information Technology</p>	<p>Group I <b><u>Legal Basis and Regulatory Processes</u></b></p> <p>Regulatory Framework</p>
<p>Group III <b><u>Regulatory Practices</u></b></p> <p>Inspection Emergency Response Problem Analysis Assessment and Enforcement</p>	<p>Group II <b><u>Technical Disciplines</u></b></p> <p>Basic Technologies (assumed) Fundamental Plant Design &amp; Operation Inspection Area Technical Expertise</p>

# **LESSON OVERVIEW**

- **The instructor will provide an introduction to the case study. This introduction may include explanatory information setting the stage for group and individual work. Personnel will be assigned to work groups.**
- **Students will review Student Manual Part A and reference material provided in the Student Manual. They will identify problems or issues that require further action and assign priorities for follow-on activities.**
- **The instructors will compile a list of problems identified by the students, prioritize these problems with student input, and assign these problems to small groups.**
  - **Develop follow-up action plans for each problem using the example worksheet provided.**

- **Selected students will present the results of their efforts in simulated verbal reports to NRC management personnel. The Regional course director will discuss the workshop at its conclusion covering policy, practices, techniques, processes, and student results.**

# **PLAN AND PRIORITIZE**

- 1. Prioritize and plan activities for addressing issues and potential problems with ethical significance or objectivity significance.**
- 2. Identify the basis for addressing each issue or potential problem.**
- 3. Develop a follow-up action plan to include:**
  - Need to inform Regional Management/HQ of issues which cannot be resolved in the time frame requested and why the problem areas exist as well as methods to overcome the ethical/ objectivity**

# **TERMINAL LEARNING OBJECTIVES**

- 1. Demonstrate and apply the principles of good regulation to help ensure that regulatory activities are appropriate, consistent, and of the highest quality.**
- 2. Understands the organizational structure of the Commission, Offices, divisions, their mandate, roles and responsibilities, and interrelationships**
- 3. Appreciates the need to adhere to the principles of good regulation which means that the regulatory body carries out its activities in an independent, open, efficient, clear, reliable and fair manner**
- 4. Recognizes, receives, documents and processes allegations in accordance with agency guidance.**
- 5. Approaches others in a way that elicits cooperation**
- 6. Recognizes and responds with an appropriate sense of urgency to problems/issues as they arise and ensures that others are appropriately informed.**
- 7. Effectively exchanges information**
- 8. Listens attentively to the message being conveyed to obtain additional information or further instructions.**

- 9. Directs relevant information to the right people.**
- 10. Shares information with others in a clear, concise, logical and timely manner. Seeks clarification when lack of understanding**
- 11. Takes notes when appropriate to recall important information and details.**
- 12. Seeks input from other experienced inspectors, and acts on the information constructively.**
- 13. Projects a positive and professional image of self and the agency.**
- 14. Communicate findings to regional management.**
- 15. Is not afraid to admit not having an answer; but investigates further and gets back with an answer.**
- 16. Maintains trust by giving consistent information and answers on issues.**
- 17. Shares knowledge and information with team members.**
- 18. Maintains commitment to team objectives even when own ideas are not supported.**
- 19. Seeks to resolve differences, encouraging discussion and proposing mutually beneficial solutions.**

# **TERMINAL LEARNING OBJECTIVES**

- 20. Offers assistance and seeks assistance when necessary.**
- 21. Shows flexibility in response to change.**
- 22. Conforms to NRC management expectations and adheres to licensee, regional, and HQ procedures applicable to inspector conduct while on site**
- 23. Recognizes limits of authority and uses the authority in a fair and equitable manner**
- 24. Honors commitments made and informs others in advance if commitment may be at risk.**
- 25. Asks for assistance and questions ways of doing things to acquire better understanding.**
- 26. Awareness of specific Regional expectations of inspectors in key area of communications, self-management, objectivity, and appearance of impropriety situations and ethics.**

# **ENABLING LEARNING OBJECTIVES**

- ELO-1.1**      **What is the Regional Policy on interaction with Licensee employees at the site and on an off duty basis? How does this play into the your car problem?**
- ELO-1.2**      **Can the Resident Inspectors attend Licensee functions such as the picnic?**
- ELO-1.3**      **Being short handed, since the SRI is out recall to realize when you are being tasked with too much to accomplish in a single day. Know when you have reached your limit as to what you can do in one day. Ask for help when needed and let management know when too much is being requested in a short period of time.**
- ELO-1.4**      **Demonstrate the ability to respond effectively to media and public interest questions using NRC policy and guidance documents.**
- ELO-1.5**      **Understands the organizational structure of the Commission, Offices, Divisions, their mandate, roles, and responsibilities and interrelationships.**
- ELO-1.6**      **Appreciates the need to adhere to the principals of good regulation which means that the regulatory body carries out its activities in an independent, open, efficient, clear, reliable, and fair manner.**

# **ENABLING LEARNING OBJECTIVES**

- ELO-1.7** Recognizes and responds with an appropriate sense of urgency to incidents as they arise and ensures that others are appropriately informed.
- ELO-1.8** Uses sound judgment in exercising the appropriate level of caution, planning and contingency planning for various situations.
- ELO-1.9** Effectively exchanges information between the site, regions and licensee.
- ELO-1.10** Directs relevant information to the correct people.
- ELO-1.11** Seeks input from experienced inspectors and acts on the information constructively.
- ELO-1.12** Is not afraid to admit not having an answer but investigates further and gets back with an answer.
- ELO-1.13** Maintains trust by giving consistent information and answers on issues.
- ELO-1.14** Conforms to NRC management expectations and adheres to licensee, regional, and HQ procedures applicable to inspector conduct while on site.

# **ENABLING LEARNING OBJECTIVES**

- ELO-1.13**     **Recognizes limits of authority and uses the authority in a fair and equitable manner**
- ELO-1.15**     **Honors commitments made and informs others in advance if commitments may be at risk.**
- ELO-1.16**     **Projects a positive and professional image of self and the agency**
- ELO-1.17**     **Maintains a fitness for duty condition at all times so that an unexpected response to a situation at the facility can be performed.**